



# EXHIBIT 5

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IN ITS ENTIRETY

# EXHIBIT 6

**ZF MERITOR LLC**

**BOARD OF DIRECTORS**

**JULY 13, 2000 MEETING**

In accordance with Section 5.3(a) of the Amended and Restated Limited Liability Company Agreement of ZF Meritor LLC (the "Company"), a regular meeting of the Board of Directors of the Company was held at the offices ZF Industries in Gainesville, Georgia, commencing at 8:00 a.m. on Thursday, July 13, 2000. The following members of the Board of Directors were present, in person, at the meeting:

ZF Member Representatives

**Wolfgang Vogel**  
**James Orchard**  
**Rolf Lutz**

Meritor Member Representatives

**Prakash Mulchandani**  
**Thomas Madden**  
**Dennis Kline**

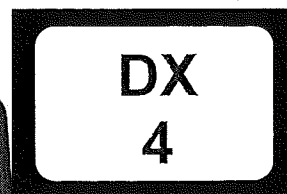
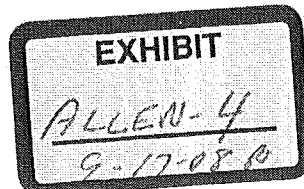
Also present, in person, at the meeting at the request of the Directors were the following individuals:

**Richard Martello**, President of the Company  
**Mardy Shepherd**, Chief Financial Officer of the Company  
**Charles Allen**, Director of Sales and Marketing of the Company  
**Dr. Manfred Schwab**, Vice President of ZF Friedrichshafen AG  
**Otto Schafhauser**, officer of ZF Friedrichshafen AG  
**Robert Clemens**, Director of Program and Supplier Management of the Company  
**Dean Molde**, Chief Engineer of the Company  
**Brad Roback**, Director of Operations of the Company  
**Tony Wooten**, Human Resources Manager  
**Michael S. Hawley**, legal counsel to, and Secretary of, the Company

Prakash Mulchandani, Chairman of the Board of the Company, presided at the Meeting. Michael S. Hawley acted as recording secretary, taking minutes of the Meeting. An Agenda for the Meeting was presented to the Board, and each of the items on the Agenda were taken up in the order listed, unless otherwise noted. Significant items of discussion and action by the Board with respect to the Agenda items were as follows:

**I. Introductory Remarks.**

Mr. Mulchandani discussed briefly the recently concluded merger between Meritor Automotive, Inc. and Arvin Industries, Inc. which was effective on Friday,



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July 7, 2000. The surviving company in the merger is now named "ArvinMeritor, Inc.". Mr. Mulchandani remarked that while the parent company of the Meritor Member was an integral part of the merger, the ownership structure of the Company remains, and the Company will continue, unaffected. It also was noted that no name change of the Company appeared warranted and that the Company would continue to use the name "ZF Meritor LLC".

## **II. Review and Approval of Minutes.**

Upon motion duly made and seconded, the Board then unanimously approved the Minutes of the March 10, 2000 meeting of the Board of Directors, as presented to the Board at the meeting.

## **III. Committee Reports.**

The Chairman then called upon the individuals noted below to report on various activities of the Committees listed:

### **A. Audit Committee.**

Mr. Shepherd, Chairman of the Audit Committee, reported on various matters including (i) the payroll and benefits conversion of ZF Industries employees to the Meritor payroll effective June 15, 2000, (ii) the planned conversion of all employees to a separate payroll and benefits system for the Company commencing January 1, 2001, (iii) depreciation issues relating to certain equipment, including the Mandelli machines, (iv) financial exposure of the Company relating to the medium duty clutch program and (v) the status of the Company's banking relationship with Wachovia Bank and Trust of the Company.

Mr. Shepherd also presented a capital appropriation request for consideration by the Board. That request was deferred until later in the meeting following discussion of the 2001-2005 Business Plan.

### **B. Compensation Committee. (No Report)**

### **C. Environmental Committee.**

Mr. Lutz, Chairman of the Environmental Committee, reported that the Committee had met on April 13, 2000 and that there were no environmental issues to report. It was noted that the ISO/14001 Certification process is expected to commence in September 2000.

### **D. Operations Committee.**

Mr. Roback, Chairman of the Operations Committee, initially confirmed the current members of the Operations Committee, who are as follows:

Brad Roback	Chairman of Operations	ZF Meritor
Robert Clemens	Director of Program and Supplier Management	ZF Meritor
Ashok Sha	Director of Corporate Quality	ZF Member
Johannes Kamzelak	Corporate Purchasing Production Materials	ZF Member
Debra Shumar	Vice President of Quality	Meritor Member
Jacob Jones	Senior Director of Procurement	Meritor Member

Mr. Roback then introduced a proposed revision to the Objective Statement of the Operations Committee, as follows, which was formally adopted by the Board:

"To review ZF Meritor LLC's Operational Strategy, Development and Progress including the areas of Purchasing, Supplier Development, Quality (Customer, Supplier, Internal), Program Management, and Manufacturing Operations. Identify potential synergies and programs within ZF and Arvin Meritor Corporations to improve the performance of ZF Meritor LLC."

There followed a discussion concerning representation on the Committee and steps that might be taken to improve attendance and participation at Committee meetings. Closing comments and discussion related to the need for an overall quality manager in light of the imminent QS 9000 recertification audit.

E. Sales, Marketing & Engineering Committee.

Mr. Allen, Chairman of the Committee, reported on various goals of the FreedomLine and issues that are affecting timing of the FreedomLine launch. Considerable discussion ensued regarding (i) gear durability, (ii) mainshaft thrust washer composition and (iii) the differing test philosophies of the ZF Member and the Meritor Member. How those philosophies are being reconciled with respect to gear design and the differences between European and American engineering standards, gear life and warranty parameters were then discussed. Given the positive initial reception to promotion of the FreedomLine, it was concluded that these issues should not be permitted to create a delay in launch of the program and must be properly addressed and resolved, with input from both the ZF Member and the Meritor Member.

Discussion then turned to the projected date, and particulars, of the FreedomLine launch, with topics covered including (i) projected orders for the first three months of production, (ii) potential issues relating to limited product availability, (iii) the need for adequate support for OEM's to assure effective implementation, (iv) marketing issues related to the launch, (v) issues relating to the Vehicle Electronic Programming Station and the effect of availability on the launch and (vi) issues relating to hard-coded speed and torque parameters.

It was reported that customers are anxiously awaiting launch of the FreedomLine and that Peterbilt would like to announce at the Great American Truck Show in November that FreedomLine will be engineered into their product. The discussion concluded with firm direction from the Board that all effort be made to maintain course for a FreedomLine launch in October, 2000.

Mr. Allen concluded with a brief report on the medium duty strategy, noting that the primary opportunity will be Paccar, which is set for full production commencing in 2003.

#### **IV. 2001-2005 Business Plan.**

A comprehensive presentation of the 2001-2005 Business Plan for the Company was then presented to the Board. That material included the following presentations and discussions.

##### **A. Market Share Analysis.**

Mr. Martello discussed, initially, the variance between projected market share penetration (expected to increase from 16.1% to 21.7%) and the actual results (decrease from 16.1% to 13%). A number of factors contributed to that situation including (i) poor product quality image, (ii) a decrease in Ryder business, (iii) turnover in the Company's sales organization, (iv) an increase in sales of Eaton Autoshift, (v) the push towards 13-speed transmissions, especially by Freightliner, (vi) the multi-year fleet business lost due to competitive equalization cutbacks in early 1999 and (vii) controlled distribution. Mr. Martello also outlined for the Board the counter measures which the Company has undertaken, and will continue to undertake, to resolve these issues.

##### **B. Technology Roadmap.**

Mr. Molde presented an analysis of the technology issues facing the Company including (i) customer purchase criteria, (ii) market trends and (iii) the competitive positions of Eaton, TTC, Mack and Daimler Chrysler Powertrain. Present status and trends were also discussed with action steps to include (i) development or acquisition of new product lines to fill out the Company's product offerings, (ii) leveraging off of FreedomLine demand and (iii) developing implementation teams to assist OEMs in product integration. Transmission



business and technology-market matrices were presented highlighting technology hurdles, product programs, technological changes and resulting impacts on markets.

With respect to the clutch business, Mr. Molde presented a competitive analysis of Eaton Spicer which included a matrix of competitive products and features in the US Class 8 clutch and medium duty clutch market. The present status and trends in that business were also reviewed with action steps to include (i) cost reduction programs scheduled for 2002 implementation, (ii) working with OEMs on pedal effort systems, (iii) finalizing relationships with Sachs and (iv) continuing to develop cost effective improvements to damper assemblies. Mr. Molde also presented matrices with respect to the clutch business setting forth technology hurdles, product programs, technological changes and the resulting impacts on the markets.

Mr. Molde then discussed briefly the possible disruptive technologies and market discontinuities which may affect the Company, including electric wheel ends, cost competitive dual mass flywheel and new clutch release systems, OEM single source business arrangements and transmission and clutch package deals.

#### C. Environmental Analysis.

Mr. Martello then reported on factors that are significant forces in favor of direct drive, fully automated transmissions including (i) major engine changes in October 2002 due to emissions standards changes, (ii) continued driver shortages, (iii) continued upward pressure on fuel prices, (iv) market pressure on "guaranteed cost of operation" sales incentives and (v) continued technician shortages. He also categorized factors mitigating against the "pull" system, including the creation of closer relationships with the OEMs, market demand for single source, full product line suppliers and possible integration by the OEMs. Mr. Martello specifically referred to (i) OEM resistance to engineering new products into their vehicles, (ii) pull-through of products becoming more difficult because of the "European influence" on the industry, (iii) sales incentives that are increasing rapidly as the market declines and (iv) consolidation of the OEMs into large global truck and bus conglomerates.

Mr. Martello then discussed environmental threats and environmental opportunities facing the Company, emphasizing that the Company is determined to make FreedomLine the industry standard.

#### D. Competitive Analysis.

In that context, Mr. Martello presented a competitive analysis of Eaton's market share, marketing techniques and incentive arrangements, highlighting Eaton's strategic intent and specific strategies. In order to maintain and expand

the Company's market position, Mr. Martello recommended that a full line of automated products be released at every OEM and that the Company develop a full Class 8 product line. An analysis of Daimler Chrysler Powertrain was then presented with an evaluation of what their likely incursions into the market might mean.

Mr. Martello then conducted an evaluation of the options for the Company in this environment and recommended two parallel strategies, those being (i) positioning the Company as one of the two long-term players at Freightliner and (ii) aggressively pursuing another global partner.

Mr. Martello then presented a volume analysis and sales plan, detailing (i) market share in the Class 8 market, (ii) vehicle market volumes forecasts for the various OEMs, (iii) a transmission penetration forecast and (iv) transmission volumes forecast. Mr. Martello then discussed market and Company volumes of automated versus manual transmissions and the projected change in automated and manual market shares through 2005. He also discussed projected transmission penetration in the Class 8 market and clutch penetration.

Mr. Martello then focused on strategies for OEMs and discussed in detail strategies intended to (i) grow the Company's transmission market share, (ii) improve penetration at Freightliner/Sterling, (iii) establish automated transmission data book positions with International, Volvo-Mack and Paccar, (iv) achieve targeted penetration at non-Freightliner customers and (v) grow the heavy duty clutch market share.

Mr. Martello then outlined key actions required of the Company, which included (i) establishing an OEM program launch team and complete engineering package for SureShift and FreedomLine, (ii) resolving engine interface issues with key customers, (iii) establishing "first install" plant assist teams for OEM installations and (iv) reengaging the demo fleet activity focused on target fleets and dealers geographically. Company sales and marketing actions outlined included (i) achieving engineering and commercial release of SureShift and FreedomLine at all major OEM customers, (ii) achieving data book publications at all major OEM customers, (iii) developing target fleet pull through lists by OEMs and (iv) establishing fleet night and demo truck schedules.

Mr. Martello presented projected transmission sales incentive programs necessary for 2001, along with pricing assumptions for the period from 2001 through 2005.

Mr. Martello then summarized the major strategic goals of the Company and outlined major structural changes that will need reevaluation over the next five years, including (i) sales incentives at the fleet level, (ii) a change in clutch after-market strategy and (iii) closer marketing programs with OEMs. Mr. Martello then briefly discussed related business areas that are not part of the

plan, closing with a reaffirmation of the ZF Meritor vision statement which is as follows:

"To design and manufacture transmissions and clutches to a quality level that exceeds our customers' expectations by integrating the passion of our employees with the technological and customer service expertise of ZF and Meritor."

E. Operational Analysis.

Mr. Roback discussed the operations objective of developing the Laurinburg facility into the highest quality and lowest cost manufacturer of Class 8 vehicle transmissions and clutches. Mr. Roback then presented an overview and strategy to attain that goal, focusing on continuous improvement and goal attainment involving (i) warranty reduction, (ii) inventory management and (iii) customer PPM. Mr. Roback then discussed each of these elements and addressed 2001 customer quality objectives including PPM targets, labor productivity and manufacturing expense controls. Mr. Roback also commented on objectives for improving Model II assembly and provided an overview of the 2001 to 2005 objectives for machining operations as well as a review of QS 9000 and ISO14001 certification.

Mr. Roback concluded by noting that one of the primary 2001 objectives will be to hire a quality manager to manage and update the quality system and update the current MES system.

Mr. Clemens then provided an analysis of supplier management which included a discussion of (i) the Company's organization, tools and procedures, (ii) initiatives being undertaken by the Company to effect material cost reductions, (iii) commodity strategies and attendant opportunities and risks and (iv) supplier quality and performance goals for the 2001 to 2005 period.

F. Financial Results.

Mr. Shepherd then reviewed results for the first three quarters of fiscal year 2000, with the transmission and clutch components of the business being broken out separately. Mr. Shepherd also presented information relating to actual results versus the business plan and presented income statements, balance sheets and cash flows for each sector.

Mr. Shepherd noted that there are continuing cash application/receivables issues with the Meritor Member which are currently under review and discussed standard margins with respect to the transmission business.

Mr. Shepherd then turned to the financial plan, discussing the projected FreedomLine contribution to sales and margins for fiscal year 2001, reviewing

the major assumptions to be taken into account in planning for the period from 2001 through 2005. That analysis included (i) a summary of projected income statement trends, (ii) projected Company balance sheets and (iii) cash flow statements during that planning period.

Mr. Shepherd then presented an analysis of the transmission business capital requirements for the period from 2001 through 2005, with projected capital requirements for fiscal year 2001 totaling \$12,065,204.

Mr. Shepherd then presented a similar analysis for the clutch business, projecting total capital requirements for that sector of the business at \$2,187,000 for 2001.

Mr. Shepherd then presented an analysis of the risks and opportunities for fiscal year 2001, noting the various impacts of base volume erosion, volume increases, price reductions, labor productivity, exchange rate variances and material performance.

Mr. Shepherd concluded by noting that the financial plan is volume driven and will be dependent both on capital funding as well as stable financing arrangements.

**V. Discussion of Business Plan.**

The Board then commenced an in-depth review and discussion of the 2001-2005 Business Plan and the supporting documentation presented by Mr. Martello, Mr. Molde, Mr. Roback, Mr. Clemens and Mr. Shepherd. Considerable discussion was directed to volume projections and the relative risks and opportunities given market conditions. The Board discussed whether the projections and expectations presented in the Plan should be modified in order to be more realistic. It was noted, in that context, that the Company was founded with ambitious expectations and should push for high but realistic goals. Market conditions were then discussed in detail with particular emphasis on customer relationships and the health of those customers. The Board noted the likely possibility of falling volumes and increased competition.

The Board directed that Mr. Martello and Mr. Shepherd revise the Company's projections for 2001 to lower volume and penetration levels and to present the revised Plan to the Board for approval in a conference call to be held in early August. Based on that revised plan for 2001, the balance of the five year plan will be revised accordingly.

With respect to capital requirements, upon motion duly made and seconded, a capital appropriation of \$12,000,000 was unanimously approved by the Board, setting the stage for launch of the FreedomLine.

In conjunction with the FreedomLine funding authorization, the following additional capital appropriation requests were submitted for consideration by the Board:

	<u>\$(000)</u>
• Appropriations request TROO-042 11 D Transmission – Tooling	\$1,458
• Appropriations request TROO-042 1850 Transmission Program – Tooling	500
• Appropriations request TROO-034 Solenoid Redesign Tooling	329
• Appropriations request TROO-040 Third Engine Test Lab Engine Dynamometer	455

Upon motion duly made and seconded, these additional capital expenditures were unanimously authorized and approved by the Board.

#### **VI. Old Business.**

Items of old business were then briefly discussed and included (i) FreedomLine AR approval by the ZF Member, (ii) final approval of a supply contract between the Company and the ZF Member, (iii) the Ecomat agreement, which is unresolved and (iv) continuing discussions regarding the Company's future role in Meritor Clutch Company.

#### **VII. New Business.**

Mr. Martello touched briefly on the requirement for a remanufacturing study, as required by the Operating Agreement of the Company. He recommended that this study be done internally and be submitted to the Board for review, with input from the ZF Member and the Meritor Member. The Board will take this recommendation under advisement.

The final order of business to come before the meeting was confirmation of the Board of Directors Meeting Schedule, which will be as follows:

<u>Date of Meeting</u>	<u>Place</u>	<u>Major Topic</u>
October 16, 2000	Friedrichshafen, Germany	Year End Results

**VIII. Adjournment.**

There being no further business to come before the Board, upon motion duly made and seconded, the meeting was adjourned.

\_\_\_\_\_  
Michael S. Hawley, Secretary

Approved:

\_\_\_\_\_  
Prakash Mulchandani, Chairman

# EXHIBIT 7

UNITED STATES DISTRICT COURT FOR THE DISTRICT OF DELAWARE

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ZF Meritor LLC and Meritor Transmission Corporation

Plaintiffs

v.

Eaton Corporation

Defendant

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Expert Report of David W. DeRamus, Ph.D.

Bates White, LLC

February 17, 2009



Expert Report of David W. DeRamus, Ph.D.

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## 1. Qualifications

- (1) My name is David W. DeRamus. My business address is 1300 Eye Street, NW, Suite 600E, Washington, DC, 20005. I am a Partner with the economic consulting firm of Bates White, LLC. I have been in this position since 1999. During this time period, I have performed economic analyses related to a range of litigation and non-litigation matters, most of which have pertained to antitrust and market power issues. I have previously submitted expert testimony in various litigation and regulatory proceedings, most of which relate to issues of market power, market manipulation, price-fixing, mergers and acquisitions, and various regulatory proposals related to market power issues. From 1998 to 1999, I was employed by the management consulting firm of A.T. Kearney. From 1993 to 1998, I was employed by the accounting firm of KPMG Peat Marwick in its Economic Consulting Services practice. In both firms, I performed a variety of economic and statistical analyses related to litigation and non-litigation matters. From 1990 to 1992, I was employed by the Harvard Graduate School of Business Administration as a Research Associate. I received a Ph.D. in Economics from the University of Massachusetts at Amherst, with a specialization in Industrial Organization and International Economics. My Curriculum Vitae is attached as Appendix A. Bates White is being compensated for my time on this matter at the rate of \$595 per hour.

## 2. Scope of charge and materials considered

- (2) I have been asked by counsel for ZF Meritor LLC (“ZF Meritor”) and Meritor Transmission Corporation (“Meritor,” and with ZF Meritor, “ZFM” or “Plaintiffs”) to provide my opinion, from an economic perspective, as to whether certain agreements between and actions taken by, Eaton Corporation (“Eaton” or “Defendant”) and the four North American manufacturers of heavy-duty, Class 8 trucks (the “OEMs”) were anticompetitive restraints of trade, resulting in harm to competition and harm to consumers; and whether these agreements and actions by Eaton are consistent with an attempt by Eaton to monopolize or maintain a monopoly in the relevant market(s) for heavy-duty truck transmissions. I have also been asked to estimate the amount of monetary damages, if any, suffered by ZF Meritor and Meritor as a consequence of the anticompetitive agreements and actions, if any, by and between Eaton and the OEMs. I have been asked to focus primarily, although not exclusively, on the Long-Term Agreements (“LTAs”) between Eaton and the OEMs beginning in approximately 2000 and the actions taken by Eaton and the OEMs in furtherance of the contractual provisions of these LTAs. I have also been asked to provide my opinion as to the appropriate definition of the relevant product and geographic market(s) for the products at issue in this case. I have been asked to take into consideration any additional information and actions by the Defendant, the

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Plaintiffs, and any other persons or entities that would have a bearing on whether the Defendant engaged in anticompetitive actions that resulted in harm to competition or consumers. The materials I have considered are listed in Appendix B.

### 3. Summary of opinions

- (3) Based on my review of the information provided in this case and my own research on the subject, I conclude that the economic evidence strongly supports the following conclusions:
- The LTAs Eaton had with each of the OEMs had an anticompetitive purpose, and the performance of those LTAs had an anticompetitive effect on the relevant markets for heavy-duty transmissions (“HD Transmissions”) used in “linehaul” and “performance” applications in North America (NAFTA) since at least July 2000.
  - The means by which Eaton enforced the LTAs constitute anticompetitive restraints of trade.
  - Eaton entered into and enforced a *horizontal* price-fixing agreement with one OEM, Mack Trucks, Inc. (“Mack”) with respect to those companies’ competing HD transmissions.
  - Eaton successfully monopolized and/or successfully maintained a monopoly in the relevant markets for HD Transmissions used in linehaul and performance applications since at least July 2000.
  - The terms and conditions of Eaton’s LTAs and the means by which they were performed and/or enforced by Eaton and the OEMs resulted in harm to competition and consumers.
  - Efficiency or other procompetitive justifications for Eaton’s LTAs are inapplicable or pretextual.
  - ZFM suffered substantial financial harm as a consequence of Eaton’s anticompetitive actions.
  - A reasonable estimate of the financial harm suffered by ZFM’s HD Transmission business resulting from Eaton’s anticompetitive actions is in the range of \$606 million to \$834 million, with an average value of \$713 million.
- (4) The following provides the bases for my opinions.

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- (5) It is appropriate to define three distinct relevant product markets for antitrust purposes: HD transmissions used in “linehaul” applications; HD transmissions used in “performance” applications; and HD transmissions used in “specialty” applications. The relevant geographic market for HD transmissions encompasses the three countries that participate in the North American Free Trade Agreement (“NAFTA”), i.e., the United States, Canada, and Mexico.
- (6) Eaton has monopoly power in the relevant markets for HD transmissions used in linehaul applications and in performance applications. In 2000, the beginning of what Eaton describes as its “partnership” period with the OEMs,<sup>1</sup> Eaton had approximately 80% of the linehaul applications market, growing to 100%, or close to 100%, by 2007; and Eaton has had 100%, or close to 100%, of the performance applications market during the relevant period. My conclusion that Eaton has monopoly power in the sale of transmissions for Class 8 trucks would not change if I were to consider all Class 8 truck transmissions as part of a single relevant product market.
- (7) Eaton’s LTAs with each of the Class 8 truck OEMs since at least July 2000 have many—if not all—of the basic features that typically render such contracts anticompetitive:
  - Eaton is a monopolist and implemented the LTAs in the relevant product and geographic markets in which it has monopoly power.
  - The LTAs are long-term contracts, i.e., longer than one year (lasting generally between five and seven years).
  - The LTAs cover 100% of the distribution channels for HD Transmissions.
  - The LTAs between Eaton and each OEM are in staggered terms, significantly restricting the share of the market for which another manufacturer of HD Transmissions can compete, even when the LTAs do expire.
  - As a condition of receiving certain prices, discounts, rebates, or other payments from Eaton, the LTAs require that the OEMs maintain or increase Eaton’s HD Transmission penetration at each OEM to the exclusion of other producers of HD Transmissions, foreclosing other producers from a substantial share—90% or more—of the relevant markets.

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<sup>1</sup> EATON-01122936-956 at 937. Consistent with this Eaton document, throughout this report, in referencing Eaton’s “OEM partnership” period, I am referring to the period from July 1, 2000 to the present. While I conclude that Eaton’s anticompetitive conduct in the relevant market began earlier than this date, I calculate ZFM’s damages beginning on July 1, 2000 as well.



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- Eaton structured the LTAs such that if the OEMs failed to achieve Eaton's HD Transmission penetration targets, the OEMs faced significant financial penalties across all of their HD Transmission purchases.
- (8) The LTAs enabled Eaton to use its monopoly in one market—the market for HD Transmissions used in performance applications—in order to limit competition in another market where greater competitive pressure existed—the market for HD transmissions in linehaul applications. The record indicates that Eaton and the OEMs recognized the OEMs' dependence on—and lack of competitive alternatives to—Eaton for certain HD transmissions, and Eaton exploited this dependence to induce the OEMs to enter into and comply with the anticompetitive provisions of the LTAs.
- (9) In order to maintain or increase Eaton's HD Transmission penetration rates specified in each OEM's LTA with Eaton—and thereby foreclose ZFM (and other actual or potential HD Transmission suppliers) from the relevant markets—Eaton coerced or induced the OEMs into (1) effectively refusing to deal with ZFM and (2) raising or manipulating the overall price of ZFM HD Transmissions paid by end customers to unacceptably high amounts, thereby preventing ZFM from competing for end customers through “pull-through” marketing activities and price reductions provided by ZFM directly to end customers. For instance, and by non-exhaustive example only, depending on the OEM and the year at issue:
- Eaton coerced or induced the OEMs into removing ZFM's competing HD Transmissions from the OEMs' “data books,” a critical and efficient source of information for OEM customers regarding the availability of competing HD Transmissions.
  - Eaton coerced or induced the OEMs into allowing the OEMs' customers only to specify non-Eaton HD Transmissions as unpublished—and therefore inherently more expensive—“options.”
  - Eaton coerced or induced the OEMs into refusing to allow their truck customers to specify non-Eaton HD Transmissions, even as unpublished options.
  - Eaton coerced or induced the OEMs into increasing the prices of ZFM's competing HD Transmissions, whether as published or unpublished options in the OEMs' data books.
  - Eaton coerced or induced the OEMs into setting the prices of non-Eaton HD Transmissions at a specified or unspecified premium above the price of comparable Eaton transmissions.
  - Eaton coerced or induced at least some OEMs to impose discriminatory and punitive truck financing terms on OEM customers who specified non-Eaton HD Transmissions.



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- Eaton coerced or induced at least some OEMs to impose discriminatory and punitive warranty terms on OEM customers who specified non-Eaton HD Transmissions.
  - Eaton coerced or induced at least some OEMs into refusing to offer their customers with a quote of the “residual values” for heavy-duty trucks that incorporated non-Eaton HD Transmissions.
- (10) Eaton used the LTAs in order to prevent the OEMs from selling and promoting an innovative product, the FreedomLine—the first fully automated mechanical, heavy-duty, 2-pedal transmission in NAFTA—even when Eaton did not have available a comparable product. Eaton refused to allow the OEMs to treat the FreedomLine transmission as a product that could be excluded from the penetration calculation formulas that Eaton used to determine the OEMs’ compliance with the LTAs. As a condition of paying the “rebates” specified in their LTAs, Eaton also required that one or more of the OEMs refrain from advertising or otherwise promoting ZFM’s FreedomLine transmission to truck customers, even if the OEM had previously been engaged in such advertising and promotional activities.
- (11) Using its monopoly power in the relevant markets, Eaton obtained from the OEMs detailed, commercially sensitive, competitive information regarding the OEMs’ sales of trucks with non-Eaton HD transmissions. At more than one OEM, the provision of this information was highly unusual and appears to have been contrary to the OEM’s normal business dealings. Eaton obtained this information to enforce Eaton’s share requirements specified in its LTAs with the OEMs and to enable Eaton (often working with the OEMs) to “convert” orders submitted by truck customers for trucks equipped with ZFM (or other suppliers’) transmissions.
- (12) Eaton and Volvo/Mack entered into a long-term horizontal price-fixing agreement beginning at least as early as 1997 and continuing into Eaton’s “OEM partnership” period. This price-fixing agreement was memorialized in an LTA between Eaton and Mack that required Mack to charge its truck customers higher prices for Mack’s transmissions than for Eaton’s transmissions. Mack and Eaton implemented the agreement, and Eaton enforced the terms of the agreement. As a result, fewer customers selected Mack transmissions, and those who selected Mack transmissions paid more for those transmissions than they would have paid in the absence of this horizontal price-fixing agreement. This conduct is typically considered *per se* illegal price-fixing potentially subject to criminal prosecution and penalties.
- (13) Prior to Meritor’s joint venture with ZF Friedrichshafen (“ZF”), Eaton prevented Meritor from acquiring Mack’s HD Transmission business or licensing Mack’s HD Transmission technology, thereby restricting Meritor’s ability to expand Meritor’s product line of HD Transmissions and further challenge Eaton’s monopoly power in both linehaul and

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performance markets. As one of the terms of its LTA with Mack, Eaton agreed to refrain from suing Mack for allegedly infringing Eaton's patents as applied to Mack transmissions used in Mack trucks, as long as the LTA was in place, and as long as Mack did not sell or sublicense its transmission business to a third party. Consistent with this and other clauses in the LTA, it is my understanding that Eaton threatened Mack with patent enforcement actions and price increases on Mack's remaining HD Transmission purchases from Eaton, if Mack sold its transmission business or licensed its transmission technology, and this threat by Eaton prevented Meritor from acquiring Mack's transmission business. This pattern and practice of behavior by Eaton is consistent with Eaton's subsequent conduct in the "OEM partnership" period, including its use of the LTAs to monopolize or maintain its monopoly in the relevant markets.

(14) Eaton's LTAs and the ways in which Eaton enforced its LTAs resulted in harm to competition and consumers along a number of different dimensions:

- Eaton used its LTAs to foreclose the only significant competitor in HD transmissions for linehaul applications, and the only significant potential competitor in performance applications, by limiting ZFM to an unsustainably small share of the markets, which led to market exit.
- Eaton used its LTAs in order to delay and limit the introduction of the FreedomLine transmission, thereby depriving customers of important benefits from this new product, such as increased fuel efficiency.
- Eaton used its LTAs to limit sales of the FreedomLine, which prevented ZFM from "industrializing" the production of the FreedomLine in the U.S., raised Eaton's rival's costs, restricted price competition for automated mechanical transmissions, and deprived customers of the opportunity to purchase trucks with FreedomLine transmissions at lower prices.
- Eaton used its LTAs in order to reduce price competition, both in terms of prices charged to the OEMs, and in terms of reducing Eaton's payments of "pull-through" incentives to the fleets.
- Eaton's LTAs caused harm to competition in the increased prices paid by fleets for non-Eaton HD Transmissions through "upcharges" and other "strategic" data book penalties, the reductions in truck warranties, and other actions by the OEMs to comply with the terms of their LTAs with Eaton.
- Eaton's LTAs also caused harm to competition by restricting output, both with respect to the more limited production of HD Transmissions during periods in which Eaton

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experienced capacity constraints and with respect to their effectiveness in suppressing the demand for trucks with ZFM's innovative FreedomLine transmission.

- In the case of the horizontal price-fixing agreement between Eaton and Mack, the harm to competition and consumers is self-evident. To the detriment of Mack truck purchasers, Mack increased the prices of its HD Transmissions to comply with its agreement with Eaton.

- (15) I have also considered potential procompetitive or competitively neutral arguments that are sometimes used to justify exclusive dealing contracts. I have not identified any basis in the evidence to suggest that such justifications are present here or that, even if such justifications were present, they would outweigh the harm to competition resulting both from the LTAs themselves and the ways in which Eaton enforced the terms of the LTAs. The economic evidence does not suggest OEMs entered into the LTAs to obtain significant technical efficiencies or to align the OEMs' incentives with those of Eaton with regard to maintaining or enhancing the quality or service associated with the transmissions included in heavy-duty trucks manufactured by the OEMs. On the contrary, the evidence indicates that the LTAs and the ways in which Eaton enforced the LTAs imposed significant *inefficiencies* on the OEMs, dealers, and end customers. Thus, the evidence is compelling that Eaton's primary purpose with the LTAs was to foreclose competition from ZFM, including the FreedomLine, and to reduce price competition with respect to financial incentives provided by Eaton and competing transmission manufacturers to heavy-duty truck consumers. There is no procompetitive or competitively neutral justification for the horizontal price-fixing agreement between Eaton and Mack, nor are there such justifications for the other ways in which Eaton enforced the terms of the LTAs.
- (16) With regard to the financial damages suffered by ZFM due to the anticompetitive agreements and actions discussed above, I base my opinion on an estimate of lost profits for the period July 2000 to February 2009 (the date of this report) and the lost enterprise value of the ZFM HD Transmission business thereafter. The lost profits and lost enterprise value of the business can be reasonably and reliably estimated based on contemporaneous financial projections made by various parties, adjusted to account for other developments in the product markets at issue—unrelated to the anticompetitive actions by Eaton and the OEMs—that may have affected the profitability of the ZFM HD Transmission business. I conclude that a reasonable estimate of the lost profits and lost enterprise value of the ZFM Transmission business is in the range of \$606 million to \$834 million in present value terms, as of the date of this report. The mid-point of this range of damages is \$713 million in present value terms.
- (17) The remainder of my report is organized as follows. In Section 4, I provide an overview of the industry. In Section 5, I define the relevant product and geographic markets. In Section 6,

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I analyze Eaton's monopoly power in the relevant markets. In Section 7, I describe the threat posed by ZFM to Eaton's monopoly power. In Section 8, I analyze Eaton's LTAs with each of the OEMs beginning in 2000, including: the terms imposed by Eaton in these agreements to prevent the OEMs from dealing with Eaton's sole significant competitor; the efforts by the OEMs to comply with the exclusionary purpose and goals of the agreements; Eaton's use of its monopoly power in order to induce the OEMs to refuse to deal with ZFM and otherwise block ZFM's "pull-through" efforts; and ZFM's unsuccessful attempts to overcome or avoid the exclusionary nature of these agreements by engaging in sales, marketing, and promotional efforts directed toward the OEMs' end customers. In this section, I also describe the horizontal price-fixing agreement between Eaton and Mack. In Section 9, I analyze the effectiveness of Eaton's LTAs in foreclosing ZFM from the relevant markets, as well as potential alternative explanations for the rapid decline in ZFM's market shares during Eaton's "OEM partnership" period. In Section 10, I assess the harm to competition and consumers caused by Eaton's LTAs with the OEMs, and I also consider (and reject) potential efficiency arguments. Finally, in Section 11, I analyze the financial damages incurred by ZFM as a consequence of Eaton's anticompetitive LTAs with the OEMs.

## 4. Industry background

### 4.1. Heavy-duty transmissions

- (18) A transmission is a device located between the engine crankshaft and the driveline of a motor vehicle.<sup>2</sup> By varying the ratio between the revolutions per minute ("RPM") of the engine and the RPM of the wheels, the transmission allows the vehicle to travel at different speeds and on different slopes while the engine operates within the fairly limited RPM range at which it delivers power efficiently. The different ratios between the RPM of the engine and the RPM of the wheels selected by the transmission are called "gears" or "speeds." The power generated by the engine and transmitted to the crankshaft is called "torque" and is measured in pound-feet ("lb-ft").
- (19) Heavy-duty trucks are conventionally classified into eight vehicle classes according to their gross vehicle weight rating ("GVWR"), which is essentially the weight that they can tow. Class 1 trucks have a GVWR of 6,000 pounds or less. Class 8 trucks are the most powerful

<sup>2</sup> The driveline includes the driveshaft, axles, differential, brakes and wheels. The driveline plus the transmission comprises the drivetrain, and the drivetrain plus the engine comprises the powertrain.

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trucks, with a GVWR of 33,001 pounds or more. Class 8 includes trucks with a wide range of GVWRs and operating characteristics that are used in a diverse set of applications.<sup>3</sup>

- (20) Transmissions differ with respect to many characteristics. Three of these characteristics are particularly important: the maximum engine torque that can be accommodated (called the “torque rating”), the number and ratios of the gears, and the degree of automation with which the gears are selected.
- (21) The amount of torque necessary to move a vehicle is, all else equal, greater the heavier the vehicle or its intended load and the rougher the terrain on which it operates. For example, trucks intended for use off-road or on steep roads are usually fitted with more powerful engines that produce more torque and thus require transmissions with higher torque ratings. The torque rating of heavy duty transmissions depends, therefore, on the particular application in which the trucks are used and typically falls between 1,150 lb-ft and 2,250 lb-ft.
- (22) The optimal number and ratios of gears also depend on the particular application in which a transmission is used. Gears with higher ratios (high gears) allow the truck to operate efficiently at high speeds but with lower power being delivered to the wheels.<sup>4</sup> Gears with lower ratios (low gears) deliver more power to the wheels of the truck but do not allow the truck to travel as fast as higher gears. Transmissions with a smaller number of speeds and wider gaps between the ratios of these speeds (such as, for example, 9- and 10-speed transmissions) are typically well suited for heavy-duty trucks that operate mostly at cruising speed on highways. On the contrary, transmissions with a greater number of speeds and narrower gaps between these speeds (such as, for example, 13-, 15- and 18-speed transmissions) are better suited for trucks that perform severe duty operations on- and off-road.
- (23) Transmissions are classified as being manual, automatic, or automated manual. With manual transmissions, the driver uses a lever to shift gears when the vehicle starts or its speed changes. For the gear shift to be successful, the transmission and the driveshaft must be disengaged by using a clutch that is operated through a pedal located to the left of the accelerator and brake pedals. Manual transmissions require a three-pedal configuration.
- (24) Automatic transmissions can select gears without requiring any action on the part of the driver. There is no need for the driver to operate a clutch or even to select the desired gear

<sup>3</sup> It is not unusual for Class 8 trucks to have a GVWR in excess of 80,000 pounds.

<sup>4</sup> Some transmission models are equipped with an “overdrive” gear ratio, i.e. a gear ratio that allows the driveshaft to achieve a greater number of RPM than the engine. This allows a vehicle that cruises at high speed on a highway to achieve better fuel efficiency by reducing the engine RPM.

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with a lever. In an automatic transmission, the function that is performed by the clutch in a manual transmission is performed by a hydraulic device called a torque converter.

- (25) Automated manual transmissions are based on a clutch that is operated automatically by a system of electronic sensors, processors, and actuators. This removes the need to operate a clutch pedal and therefore makes a two-pedal configuration possible. It can be used in either automated or manual mode. In the automated mode, a set of sensors and actuators shifts gears when required without any action from the driver. In automated mode, just as with an automatic, a fully automated manual transmission requires no intervention on the part of the driver to shift gears. In the manual mode, the driver uses a lever or similar device to initiate shifts between speeds, and the computer operates the clutch or controls the engine to allow for clutchless shifting.<sup>5</sup> Beginning in the early 1990s, transmission suppliers such as Meritor and ZF Meritor have introduced transmission technology with ever increasing degrees of automation, culminating with ZFM's full production release of North America's first two-pedal fully automated mechanical transmission in 2001.

#### **4.2. Manufacturers of heavy-duty transmissions**

- (26) During the Eaton "OEM partnership" period, HD Transmissions sold in North America were produced by a small number of manufacturers: Eaton, Meritor, ZF Meritor, ZF, Allison Transmissions ("Allison"), Transmission Technologies Corporation ("TTC"), and Mack Trucks, Inc. ("Mack").
- (27) Eaton was founded in 1911 and has been the dominant HD Transmission manufacturer in North America since 1958, when it acquired the Fuller Manufacturing Corporation.<sup>6</sup> Eaton manufactures a variety of heavy duty transmissions, including 9-, 10-, 13-, 15-, and 18-speed and low-low (LL) manual transmissions, and 10-, 13- and 18-speed automated manual transmissions.
- (28) Meritor was created in October 1997 as a spin-off of Rockwell International's automotive business that had begun manufacturing heavy duty manual transmissions in 1989.<sup>7</sup> In June 1999, Meritor entered into a joint venture with ZF Friedrichshafen AG and formed ZF Meritor. After the operational dissolution of ZF Meritor, Meritor continued to manufacture 10-speed manual transmissions and continued to distribute automated manual FreedomLine transmissions manufactured in Europe until it exited the market at the end of 2006. Today,

<sup>5</sup> Between 1996 and 2003, Eaton also produced some manual transmissions in which the top two speeds, and only the top two speeds, were automated. This type of transmission was called "Top-2."

<sup>6</sup> See <http://www.eaton.com/EatonCom/OurCompany/AboutUs/EatonHistory/index.htm>

<sup>7</sup> See <http://www.arvinmeritor.com/about/history.asp>

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Meritor continues to market the FreedomLine transmission on behalf of ZF, though sales of that transmission have become *de minimis* in North America.

- (29) Allison was a division of General Motors until August 2007, when it was acquired by the Onex Corporation and the Carlyle Group.<sup>8</sup> It is a major manufacturer of light-, medium-, and specialty heavy-duty automatic transmissions sold in North America.
- (30) TTC was formed in 1998 as a joint venture between Dana Corporation and the DESC group, one of Mexico's largest automotive component suppliers.<sup>9</sup> TTC manufactures and sells light, medium, and heavy-duty manual transmissions primarily for use in Mexico.
- (31) Mack is a manufacturer of heavy-duty trucks that has vertically integrated in the production of some manual transmissions.<sup>10</sup> Mack produces transmissions solely for use in some of the trucks it sells to end customers, and it does not sell transmissions to other heavy-duty truck OEMs.

#### 4.3. Heavy-duty trucks and their applications

- (32) Class 8 trucks encompass trucks with a wide range of GVWR and are used in a wide variety of applications. The applications in which Class 8 trucks are used are often grouped into at least four main categories: linehaul, severe duty performance, on-off highway performance, and specialty. Each of these categories—and especially the severe duty performance, on-off highway performance, and specialty categories—includes a great number of highly differentiated applications.<sup>11</sup>
- (33) Trucks used in linehaul applications “move different type of freight in high mileage operation (over 60,000 miles a year) on road surfaces of good to excellent concrete or asphalt with distances between start and stopping of more than 30 miles.”<sup>12</sup> Given the long distances travelled by the trucks used in these applications, fuel efficiency and the comfort and safety of drivers are important considerations for the fleets that own and operate these trucks.<sup>13</sup>

<sup>8</sup> See <http://www.allisontransmission.com/company/pressreleases/Aug2007/316.jsp>.

<sup>9</sup> See <http://www.ttcautomotive.com/English/aboutus/aboutus.asp>

<sup>10</sup> See <http://www.macktrucks.com/default.aspx?pageid=196>

<sup>11</sup> As I discuss in more detail below, the classification of heavy duty applications that I adopt reflects closely Eaton's classification of its transmissions in different product lines.

<sup>12</sup> See Dana and Eaton's "Roadranger Warranty Guide, TCWY0900, July 2007," p. 8.

<sup>13</sup> Since large national and regional fleets are important operators in linehaul applications, some documents also refer to linehaul applications as "fleet" applications (see, e.g., EATON-00230530).



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- (34) Trucks used in severe duty performance applications typically travel less than 60,000 miles per year. They face a variety of operational challenges, depending on the particular application—such as heavy haul,<sup>14</sup> logging, mining, or oil field operations—in which they are used. These challenges may include “consistent operation at or near maximum GVW ratings, in dirty or wet environments, and on unstable or loose unimproved road surfaces with high grade slopes (i.e. greater than 8%).”<sup>15</sup> Consequently, as noted in Eaton’s 2006 Strategic Plan: “The ability to carry heavy loads and operate on steep grades is the key factor in this segment. [The] NAFTA [market] also emphasizes versatility, driver comfort, and durability.”<sup>16</sup>
- (35) On-off highway performance applications are usually found in the construction industry, in which trucks are used to move material to and from job sites (*e.g.*, dump trucks) or to perform specialized operations (*e.g.*, cement mixers). These trucks typically travel between 10 and 30 miles per trip on roads with a maximum slope grade of 8% and perform at least “90% of loaded operation on road surfaces of concrete, asphalt, gravel, crushed rock or hard packed dirt and up to 10% of loaded operation into sandy or muddy job sites.”<sup>17</sup> Versatility is an important factor for the trucks used in these applications, as they need to be able to combine the ability to creep off-road (*i.e.*, move with significant power at extremely low speeds) with the ability to cruise efficiently on-road.
- (36) Specialty applications are a highly differentiated group that includes refuse collection, fire service, city delivery, urban transit, and other applications that require frequent stops, typically in an urban environment. The trucks used in these applications are often purchased by municipalities and operated by less experienced drivers than the vehicles used in other applications. Therefore, the purchasers of trucks used in these applications pay particular attention to ease of operation and driver safety. For transit buses, the comfort of the passengers (and thus the ability of the transmission to shift gears smoothly) is also an important consideration.
- (37) Although certain truck models lend themselves to being used in certain applications better than others, a truck is primarily a “shell” that needs to be equipped with the appropriate components for the application in which it is going to be used. Among these components, the choice of the appropriate engine and transmission is particularly important. For example, a truck used in severe duty applications cannot operate effectively unless it is equipped with a

<sup>14</sup> Defined in Dana and Eaton’s Roadranger Warranty Guide (*ibid.*, p. 6) as “movement of heavy equipment or materials at legal maximums or special permit loadings, typically at Gross Combined Weight in excess of 140,000 lbs.”

<sup>15</sup> See Dana and Eaton’s Roadranger Lubrication Manual (TCMT0021, October 2007)

<sup>16</sup> See EATON-00716793.

<sup>17</sup> See Dana and Eaton’s Roadranger Warranty Guide (*ibid.*, p. 4).



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sufficiently powerful engine and a transmission with many speeds and a high torque rating. Such a powerful engine and multi-speed transmission would, however, be unnecessarily expensive for a truck used in linehaul applications and would worsen fuel efficiency.

#### 4.4. Truck manufacturers (OEMs)

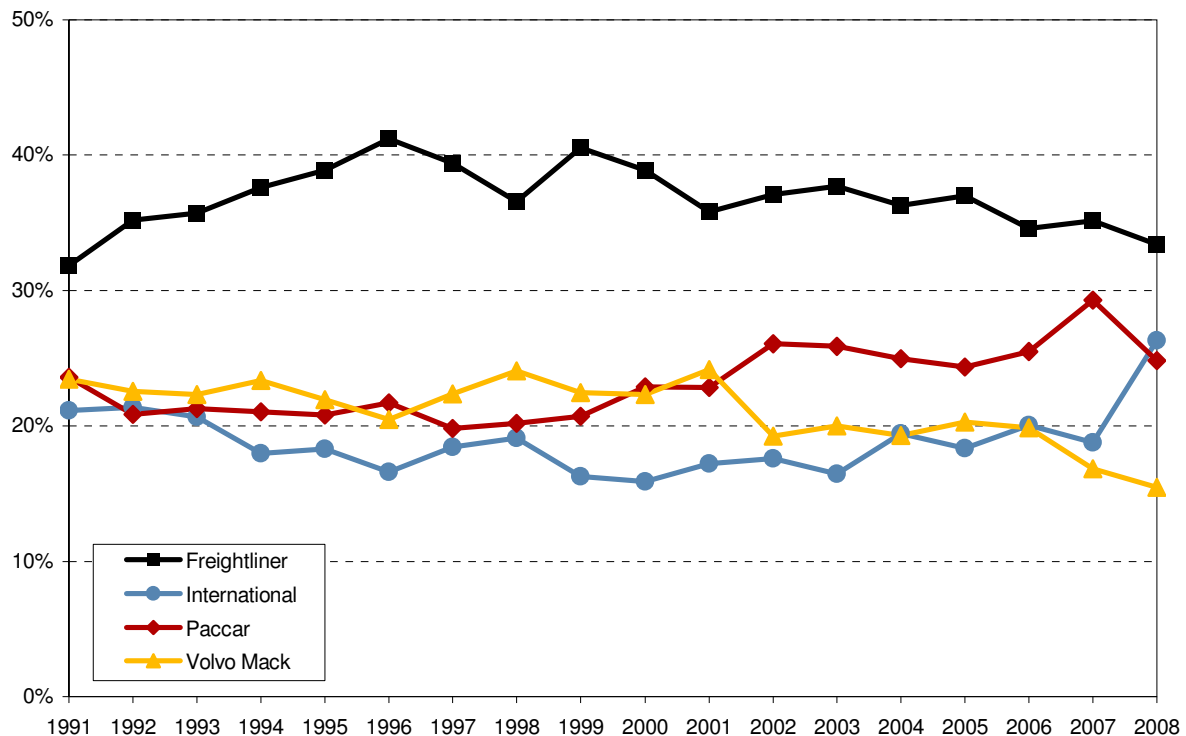
- (38) Transmission manufacturers sell their products directly to four OEMs: Daimler Trucks North America LLC (“DTNA” and previously named “Freightliner”), PACCAR Inc. (“PACCAR”), International Truck and Engine Co. (“International”), and the Volvo Group. DTNA sells trucks in North America under the Freightliner, Western Star, and Sterling<sup>18</sup> brands. PACCAR sells its trucks in North America under the Kenworth and Peterbilt brand names.<sup>19</sup> International is owned by the Navistar International Corporation and sells its trucks in North America under the International brand name. The Volvo Group acquired Renault Véhicules Industriels, including Mack Trucks, in 2001. The Volvo Group sells trucks in North America under the Volvo Trucks North America (“Volvo”) and Mack (collectively with Volvo, “Volvo/Mack”) brand names.
- (39) Figure 1 shows each OEM’s share of total Class 8 truck production for the years 1998–2006. DTNA is the largest of the four OEMs, with a share of 34.5% in 2006. For the other three OEMs, as of 2006, PACCAR had a 25% share, Volvo/Mack had a 21% share, and International had a 19.5% share. Figure 1 also shows that the shares of the four OEMs have remained fairly constant over time.

<sup>18</sup> DTNA has decided to discontinue sales of Sterling trucks.

<sup>19</sup> In Europe PACCAR sells its trucks under the DAF brand name. See [http://www.paccar.com/company/get\\_to\\_know.asp](http://www.paccar.com/company/get_to_know.asp)

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**Figure 1: OEMs' share of Class 8 truck production (units)**



Source: Monthly number of trucks built in NAFTA from ZF Meritor Penetration Reports.

- (40) The prices OEMs pay for HD Transmissions generally are determined through direct negotiations between the transmission manufacturers and the OEMs. These prices often are memorialized in supply contracts or purchase orders.

#### 4.5. Fleets and other end customers

- (41) The purchasers of heavy-duty trucks include fleets, small owner-operators, construction companies, and municipalities. While owner-operators and small fleets typically purchase their trucks through truck dealerships, large fleets purchase directly from OEMs.<sup>20</sup> The large fleets that purchase directly from the OEMs usually invite bids from different OEMs. Although truck purchasers may show some loyalty to a particular OEM, some fleets or owner-operators may be willing to switch OEMs if their preferred OEM does not offer some of the optional components that they desire. This is most likely to occur when a new and

<sup>20</sup> Occasionally some large fleets negotiate the terms of their purchase directly with the OEM but they receive delivery of the trucks from a dealer that charges a fee for its services.

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superior component (*e.g.*, ZFM's FreedomLine transmission) becomes available on the market.<sup>21</sup>

- (42) Most trucks are produced to order. Final customers choose the truck model and its configuration today from a printed electronic catalogue published by each OEM (called the "data book") that specifies the components (including the transmissions) available for that truck model. In particular, in its data book, an OEM typically specifies a "standard" transmission and a number of optional transmissions. Heavy-duty transmission manufacturers actively seek standard position in an OEM's data book. The OEMs offer "standard" transmissions at no additional charge, while published and unpublished optional transmissions can be ordered by paying an additional charge (known as an "upcharge").<sup>22</sup> The OEMs traditionally determine the upcharge for an optional transmission by calculating the difference between the installed costs of the optional and standard transmissions and by multiplying this difference by a number that they determine called the "multiplier" (typically in the range of 2.25).<sup>23</sup> The OEMs also generally impose a larger "multiplier" (*i.e.*, resulting in a higher upcharge) for unpublished vs. published optional transmissions, typically in the range of 2.5,<sup>24</sup> and may also impose additional cost penalties for "non-partner" or "discretionary" components. The discretionary "non-partner" penalties can be significant and in some instances penalize the most efficient supplier.<sup>25</sup> For example, at PACCAR, both Kenworth and Peterbilt imposed a penalty on ZFM transmissions.<sup>26</sup>
- (43) Since the standard transmission is generally considered the transmission recommended by the OEM for that particular truck model and dealers tend to take the "path of least resistance" in selling trucks,<sup>27</sup> customers that do not have particularly strong preferences for a different transmission are more likely to purchase a truck with the standard transmission. Furthermore, since optional transmissions are priced by the OEMs using the multiplier system described above, the OEM generally provides the standard transmissions with a retail price advantage relative to optional transmissions if there is any increase in the installed cost of the optional compared with the standard transmissions.

<sup>21</sup> See, *e.g.*, EATON-00648434.

<sup>22</sup> In a few instances in which the optional transmission is less expensive than the standard transmission, the upcharge is negative.

<sup>23</sup> For example, the multiplier applied by Freightliner in 2002 was equal to 2.25 for published options and 2.50 for unpublished options. See EATON-00029240.

<sup>24</sup> As noted by Eaton, "The retail differences between our Autoshift and FreedomLine are very alarming, since unpublished DB [data book] pricing usually receives a higher multiple than stand DB pricing (Cost \*2.5 v. 2.25)." EATON-00029240.

<sup>25</sup> See, *e.g.*, Deposition of Terry Tosie at 39:9-33:13, 168:3-20 (deviation penalties of \$1000-\$2000).

<sup>26</sup> EATON-1408524 ("still a penalty for spec'ing a Meritor product"); EATON-00387045-78.

<sup>27</sup> "We all understand how truck sales work, they take the path of least resistance to sell the truck and collect a commission." EATON-00639313-315, at 313. See also EATON-00450841-844, at 844; and ZFMA0095302.

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- (44) Although published optional transmissions are at a disadvantage relative to standard transmissions, this disadvantage is much more serious for unpublished optional transmissions. Unpublished transmissions can still be ordered by a customer that knows of their availability, but this comes at a significantly higher price and greater inconvenience than ordering a published option. The customer needs to file an official request that needs to be approved by the OEM. Furthermore, as discussed above, the OEMs usually apply higher multipliers to unpublished transmissions, resulting in higher retail surcharges for these transmissions. Therefore the manufacturers of unpublished optional transmissions are at a significant competitive disadvantage relative to manufacturers that are published as standard or optional.<sup>28</sup>
- (45) The marketing of HD Transmissions by manufacturers generally consists of both “push” marketing and “pull-through” marketing. “Push” marketing consists of marketing, promotions, and sales activities by the transmission manufacturers targeted directly at the OEMs, usually for the purpose of obtaining standard position. “Pull-through” marketing consists of marketing, promotions, and sales activities by the transmission manufacturers targeted at downstream purchasers of heavy-duty trucks, such as truck fleets (the target of most “pull-through” marketing activities). If these downstream purchasers can “specify” (or “spec”) a specific manufacturer’s component (*e.g.*, a ZFM HD Transmission), then an OEM from whom a truck fleet is purchasing its trucks can be indirectly influenced by a transmission manufacturer to purchase that manufacturer’s components. Examples of “pull-through” marketing include paying monetary incentives to end customers (sometimes called “field incentives,” “competitive equalization payments,” “CE,” or “SPIFFs”) and by organizing demonstrations of their products. Transmission manufacturers generally pay CE to the fleets in an attempt to match a competitive offer and/or overcome the retail surcharges imposed by the OEMs on optional or unpublished transmissions. To the extent manufacturers of transmissions cannot effectively “push” transmission sales to the OEMs through contractual arrangements or cannot gain standard position within an OEM’s databook, often their only recourse is to engage in such “pull-through” marketing and CE payments in an attempt to stimulate sales.
- (46) Although “pull-through” is a marketing activity and thus may be one way in which transmission manufacturers compete with each other, it is not a distribution channel for

<sup>28</sup> As explained by a PACCAR executive, taking some transmission models out of the data book makes it very difficult for dealers to “spec” trucks and significantly increases the number of “OARs” and “REIs” (*i.e.*, approvals of special requests) requested by dealers. This may result in lost sales, since dealers who are unable to find a particular component may not be able to provide a quote for an order that the truck customer would have placed, if the unpublished components had been readily available to spec in the data book. Therefore, if an OEM eliminates a transmission from being a published option in order to comply with an LTA with Eaton, this can create significant inefficiencies, as discussed further below. See document 000203 in the PACCAR production.

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transmission manufacturers. End customers do not purchase their transmissions directly from transmission manufacturers but rather purchase fully assembled trucks from the OEMs. The OEMs are therefore the only channel through which transmissions manufacturers can sell into the market.

## 5. Definition of the relevant markets

### 5.1. Analytical framework

- (47) Defining a relevant product market is an analytical tool to assist in determining whether a seller can exercise monopoly power and harm competition. A standard approach to defining a relevant product market is to analyze the willingness of buyers to substitute between the product at issue and other products. According to this approach, a product market can be defined as being “composed of the products that have reasonable interchangeability for the purposes for which they have been produced—price, use and qualities considered.”<sup>29</sup>
- (48) In the case at hand, end customers determine the substitutability between different transmissions to a great degree based on the technical characteristics and capability of the transmissions to perform satisfactorily in different applications, their fuel efficiency, their implications for the comfort and safety of the driver, their price levels, and other factors considered by owners when choosing components for their trucks.
- (49) A well established approach to defining the relevant product markets in merger analysis is the hypothetical monopolist paradigm. According to this paradigm, a market is the smallest set of products for which a hypothetical monopolist would find profitable a small but non-transitory increase in price.<sup>30</sup> If there are products towards which a significant number of buyers would substitute in response to an increase in the price of the initial set of products included in the candidate market—thus making the price increase unprofitable for the hypothetical monopolist—these products should be included in the relevant product market. Conversely, products that are poor substitutes—and thus weak competitive constraints—for the products in the relevant market should be excluded from this market.
- (50) In the context of merger analysis, the question is whether the merger is likely to lessen competition, and the market is typically defined with reference to the price prevailing before the merger. However, in a monopolization case, the prevailing price is generally expected to

<sup>29</sup> United States v. E. I. du Pont de Nemours & Co., 351 U.S. 377, 404 (1956).

<sup>30</sup> U.S. Department of Justice and Federal Trade Commission Horizontal Merger Guidelines § 1.0 (1992) (revised edition 1997), available at <http://www.usdoj.gov/atr/public/guidelines/hmg.pdf>.

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already reflect the exercise of monopoly power. A profit maximizing monopolist raises price up to the level where further price increases would not be profitable, because a sufficient number of buyers would switch to other products or simply curtail their purchases. Therefore, applying the hypothetical monopolist test to the prices prevailing in a market that is already monopolized may erroneously result in the relevant market or markets being defined too broadly. Although this problem, known as the “cellophane fallacy,”<sup>31</sup> generally makes a strict application of the hypothetical monopolist test inappropriate for monopolization cases, evaluating actual and potential patterns of substitution between transmission types remains a useful analytical tool for market definition.

- (51) Other types of evidence can also be considered in defining a relevant product market. For instance, a monopolist’s ability to maintain the prices of a set of products substantially above their long-run average cost for an appreciable period of time demonstrates that the products excluded from this set do not or did not constitute a sufficient competitive constraint for the products included in the set. The absence of good substitutes for the monopolist’s products can also be demonstrated by documenting a buyer’s inability to find alternative sources of supply when an event affecting the monopolist’s ability to supply occurs.<sup>32</sup> The transmission manufacturers’ and buyers’ views of the relevant markets for their products and their views of the products’ substitutability, as expressed in their internal documents, can also provide useful information.

## 5.2. Relevant product markets

- (52) In order to define the relevant product market or markets for the Eaton and ZFM HD Transmissions at issue in this case, it is important to begin with the operating requirements and applications of the vehicles in which they are installed, since these will determine the transmission requirements of the engines and other powertrain components installed in these vehicles, which in turn will determine the physical substitutability of one transmission for another. The most fundamental product characteristic that will determine the physical substitutability of transmissions is the GVWR of the truck in which they are to be installed, which is a primary determinant of the required torque rating of a suitable transmission.
- (53) The transmissions used in medium- and light-duty (*i.e.*, Class 7 and below) trucks cannot be used in heavy-duty Class 8 trucks. The torque rating of these transmissions would not be sufficient to withstand the engine torque that a Class 8 truck needs to operate effectively in

<sup>31</sup> United States v. E. I. du Pont de Nemours & Co. (*Ibid.*). For a discussion of this problem and further references see U.S. Department of Justice, *Competition and Monopoly: Single-Firm Conduct under Section 2 of the Sherman Act*, (2008), pp26–27. The report can be accessed at: [www.usdoj.gov/atr/public/reports/236681.htm](http://www.usdoj.gov/atr/public/reports/236681.htm).

<sup>32</sup> See, for example, VM2\_00002576–77; see also Deposition Transcript of Mark Meegan at 18:2–23.

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most applications. Therefore, I conclude that medium- and light-duty transmissions are not in the same product markets that include the HD Transmissions manufactured by Eaton and ZFM.<sup>33</sup>

- (54) While a market for Class 8 HD Transmissions is the broadest conceivable relevant market to which Eaton and ZFM's HD Transmissions could belong, I do not consider this an appropriate relevant market definition suitable to assess Eaton's conduct at issue in this case. First, Class 8 trucks encompass trucks with a wide range of GVWR, from 33,001 to over 80,000 pounds. The engines and other drivetrain components used in trucks with a GVWR of 33,001 pounds have different torque rating requirements for a transmission than those used in trucks with a GVWR of 80,000 pounds or more. Second, the diverse range of applications in which Class 8 trucks are used—ranging from linehaul long-distance trucking over asphalt with minimal starts and stops, to severe-duty applications that require hauling heavy loads up steep grades while “creeping” on loose dirt or mud, to on-off highway applications of construction vehicles and dump trucks that may require both creeping and highway driving, to the frequent stops and starts of various service vehicles in congested urban environments—all require transmissions not simply with very different torque ratings but also with different numbers of gears and gear ratios in order to perform adequately. A transmission without deep-reduction gearing will simply not perform adequately to substitute for a transmission used in specific severe-duty applications, just as a transmission suitable for a mining truck, for example, is unlikely to have the gearing suitable for a linehaul application. Indeed, it may be reasonable to define more narrow relevant product markets based on applications differentiated by a relatively narrow range of torque ratings, the numbers and ratios of gears, as well as the degree of automation, since the degree of substitutability will depend not only on the physical engine requirements, application requirements, but also driver requirements: drivers who are only trained on automatic HD transmissions may not be able to drive trucks equipped with manual HD transmissions, and thus purchasers of these trucks may not consider these transmissions as substitutes.
- (55) For purposes of evaluating Eaton's conduct in this case, I conclude that there are at least two distinct relevant product markets to which the HD Transmissions manufactured by Eaton and ZFM belong. The first relevant product market includes manual and automated manual HD Transmissions used in linehaul applications. The second relevant product market includes manual and automated manual HD Transmissions used in severe duty and on-off highway performance applications.<sup>34</sup> I have combined the transmissions used in severe duty and on-off

<sup>33</sup> Eaton conducts separate assessments of market developments, competitive threats and business strategies for medium and light duty transmissions on the one hand and heavy duty transmissions on the other. See, e.g., Eaton Truck Group Strategic Plans for 2004 and 2006, EATON-00230527 and EATON-00716788.

<sup>34</sup> As I discuss further in Section 6.2.3, my conclusions would not change if I defined the relevant market more broadly by including all the heavy duty transmissions used in Class 8 trucks, because Eaton would be a monopolist also in this



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highway performance applications, described above, into a single product market for performance applications, as this aggregation is appropriate for purposes of evaluating Eaton's conduct in this case. There is also a third distinct product market for another subset of HD Transmissions, the market for heavy-duty automatic transmissions with torque converters used in specialty applications. Although I define this specialty applications product market for completeness, the transmissions included in this market are produced almost exclusively by Allison, with Eaton and ZFM having only a very minor presence.

- (56) I consider automated manual transmissions to be in the same product markets as manual transmissions used in linehaul and performance applications, based on observed substitutability in demand. Over the past two decades, OEMs have increasingly offered truck customers automated manual transmissions (with varying degrees of automation) as substitutes for manual transmissions to be installed in trucks used in many applications, with their most important offering being in linehaul applications. For example, as demonstrated in Table 1, below, Eaton offers both "linehaul manual" and "linehaul automated manual," as well as "performance manual" and "performance automated manual" transmissions. Truck customers have also increasingly substituted automated manual transmissions for manual transmissions in those truck applications for which such alternatives were offered by OEMs. While the predominant substitution by truck purchasers of automated manual for manual transmissions has occurred in linehaul applications, they can also be substitutes in several important performance applications.
- (57) Given that the transmissions included in each of these three relevant product markets are differentiated products used in a variety of highly differentiated applications, it may also be appropriate to define product markets more narrowly.<sup>35</sup> This is the approach adopted by the U.S. Department of Justice ("U.S. DOJ") in its 1993 complaint challenging the merger of Allison with ZF. In its complaint, the U.S. DOJ recognized that among Class 8 vehicles, there is a wide range of GVWRs and, even importantly, diverse operating requirements associated with different applications. As the U.S. DOJ argued:

Automatic transmissions vary substantially according to the requirements of the vehicle involved. There are different sizes of automatic transmission depending on the size of the powertrain. And even transmissions of the same size vary in gear ratios and features that depend on the vehicle's use. Thus, the

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broadly defined tentative market. However, I consider such a market definition inappropriate, because some of the products included in this tentative market are not substitutes or very poor substitutes for one another.

<sup>35</sup> See U.S. v. General Motors Corp., No. 95-530 (D. Del. Filed Nov. 16, 1993) (defining two distinct markets: transmissions for transit buses and transmissions for refuse trucks).



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choice among types of automatic transmissions will differ depending on the use made of the vehicle.<sup>36</sup>

- (58) Concluding that the specific requirements of the applications in which they are used make it unlikely that a consumer would substitute a transmission with different characteristics following a price increase, the U.S. DOJ proposed to treat automatic transmissions for heavy-duty transit buses as its own distinct product market, and automatic transmissions for heavy-duty refuse route trucks as another separate product market.
- (59) The U.S. DOJ's analysis and conclusions with regard to product differentiation among HD Transmissions based on the specific applications of the trucks in which they are installed is relevant to this case, as it indicates the reasonableness of defining at least three distinct relevant product markets for HD Transmissions used in linehaul, performance, and specialty applications, rather than relying on a single, undifferentiated market for Class 8 HD Transmissions. For this case, the U.S. DOJ's differentiation between automatic transmissions used among various specialty applications has no impact on the analysis of the competitive effects of Eaton's conduct at issue, and I therefore consider the market for heavy-duty automatic transmissions with torque converters used in specialty applications to be a single product market.
- (60) In the product market for HD Transmissions used in performance applications, in which Eaton does participate, there is a wide range of diverse truck applications spanning heavy-haul, logging, oil field activities, mining, and construction, to name a few. The "form, fit, and function"<sup>37</sup> for the transmissions used in each of these applications can be quite different from those used in the other applications. As noted above, the market for HD transmissions used in performance applications is often discussed in terms of two somewhat more narrow categories of applications: HD Transmissions used in severe duty performance applications, such as 13- and 18-speed manual and automated manual transmissions; and HD Transmissions used in on-off highway performance applications, such as 15-speed and low-low (LL) transmissions. Although distinguishing between these two different types of applications for performance may be appropriate in other contexts, for purposes of this case, I follow the guidelines for market definition described above in order to identify the broadest markets that can reasonably be defined, and I conclude that a single performance applications product market is sufficient for an analysis of Eaton's conduct. It is common practice for more narrowly defined product markets to be aggregated when such an aggregation does not alter the competitive analysis of the conduct at issue.

<sup>36</sup> See *United States of America v. General Motors Corp.*, United States District Court of District of Delaware, Civil Action No. 93-530.

<sup>37</sup> *Ibid.*

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- (61) In Sections 5.2.1 and 5.2.2, I discuss further the specific transmission types I include in each of the product markets for linehaul, performance, and specialty applications, and I explain the criteria and evidence on which I base these conclusions. Prior to examining these product markets in more detail, however, it is worth noting several other factors that strongly indicate that these are appropriate definitions of relevant product markets. First, this definition of relevant product markets is consistent with Eaton's own classification of its transmission models into different product lines. This classification is summarized in Table 1.

**Table 1: Eaton's classification of heavy duty transmissions<sup>38</sup>**

Product line	Transmission characteristics
Linehaul manual	Over 90% of transmissions included are 9- and 10-speed with torque ratings between 1,150 and 1,850 lb-ft.
Linehaul automated manual	Over 90% of transmissions included are 10-speed Auto-Shift or Ultra-Shift with torque ratings between 1,050 and 1,850 lb-ft.
Performance manual	Over 90% of transmissions included are 13- and 18-speed with torque ratings between 1,650 and 2,250 lb-ft.
Performance automated manual	Over 90% of transmissions included are 18-speed Auto-Shift or 13-speed Ultra-Shift with torque ratings between 1,650 and 2,250 lb-ft.
Performance convertible	All transmissions included are 9-speed (convertible to 13-speed) with torque ratings between 1,650 and 1,850 lb-ft.
On/off highway	All transmissions included are 8LL, 9LL, or 15-speed and 85% have torque ratings between 1,150 and 1,650 lb-ft

Source: Eaton transmission builds data. See EATON-01124597.

- (62) Second, an additional important reason to define at least three separate product markets within Class 8 transmissions is that this is an industry characterized by strong patent protection and enforcement actions, both threatened and actual, as discussed further below in the section on barriers to entry. The technology used for HD Transmissions in linehaul, performance, and specialty applications is sufficiently different, even among specific types of applications within those classifications, that a manufacturer cannot simply use its transmission technology for one type of application in order to produce transmissions for use in other applications. This is evident in the fact that there are two manufacturers whose transmissions are sold primarily for a single category of applications (ZFM's transmissions for linehaul applications and Allison's automatic transmissions for use in specialty applications), one manufacturer whose transmissions are sold for both linehaul and performance applications (Eaton), and no transmission manufacturer whose transmissions are

<sup>38</sup> In Eaton's original builds database linehaul manual transmissions are called "TRANS HEAVY MANUAL", linehaul automated manual transmissions are called "TRANS HEAVY AUTO", performance manual transmissions are called "TRANS HEAVY MANUAL PERFORM", performance automated manual transmissions are called "TRANS HEAVY AUTO PERFORM", performance convertible transmissions are called "TRANS CONVERTIBLE", and on/off highway transmissions are called "TRANS HEAVY MANUAL ON/OFF HIGHWAY".

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sold in significant quantities in all three types of applications. In Sections 6.4 and 10.2 , below, I also discuss ZFM's attempts to expand its line of primarily linehaul transmissions with additional transmissions for performance applications through acquisitions, joint-ventures, licensing arrangements with other companies, or its own efforts, which provide additional evidence that simply having transmissions for one type of application or a category of applications such as linehaul does not provide adequate substitutability for transmissions in performance applications (or specialty applications).

- (63) Third, the warranty provisions of the transmission manufacturers and truck OEMs further limit the ability of a transmission designed for one application from being used for another application. If a truck purchaser uses a truck with a linehaul transmission in a performance application, the warranty provided by either the OEM or the transmission manufacturer may be voided.<sup>39</sup>
- (64) Fourth and finally, the persistent differences in prices and profit margins earned by manufacturers on transmissions used in different applications is also strongly indicative that HD Transmissions used in linehaul, performance, and specialty applications are appropriately considered in different product markets. Eaton earns significantly higher margins on its HD Transmissions used in performance applications as compared with those used in linehaul transmissions (although the margins Eaton earns in both product markets are high by almost any standard). Over the period 2006–2008, for example, Eaton's gross profit margin<sup>40</sup> on manual linehaul transmissions was an average of 30.5%, while its gross profit margin on manual performance transmissions was an average of 47.5%, a difference of fully 17 percentage points in absolute terms. In relative terms, the gross profit margin for performance transmissions is 56% higher than for linehaul transmissions. If transmissions for performance and linehaul applications belonged to the same relevant product market, I would not expect such profit margin differentials to persist, as substitution in the supply of competing products would tend to equalize profit margins, if not prices. In Sections 5.2.1–5.2.2, below, I discuss further the significant and persistent price differentials between HD Transmissions used in these different product markets, both between performance and linehaul transmissions, and between the automatic HD Transmissions used in specialty applications as compared with either linehaul or performance transmissions.

<sup>39</sup> See, for example, Eaton Roadranger Warranty Guide, <[http://www.roadranger.com/ecm/groups/public/@pub/@eaton/@roadranger/documents/content/ct\\_126924.pdf](http://www.roadranger.com/ecm/groups/public/@pub/@eaton/@roadranger/documents/content/ct_126924.pdf)> ,, and Eaton Roadranger Warranty Manual, <[http://www.roadranger.com/ecm/groups/public/@pub/@eaton/@roadranger/documents/content/rr\\_tcwy-0600.pdf](http://www.roadranger.com/ecm/groups/public/@pub/@eaton/@roadranger/documents/content/rr_tcwy-0600.pdf)> accessed on February 15, 2009.

<sup>40</sup> This was calculated as the ratio of Eaton's reported "extended standard costs" to revenue.

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### 5.2.1. Market for HD Transmissions used in linehaul applications

- (65) This product market includes the manual 9- and 10-speed transmissions produced by Eaton,<sup>41</sup> ZFM, and TTC, the 10-speed Autoshift and Ultrashift automated manual transmissions produced by Eaton, the automated manual FreedomLine transmissions produced by ZFM, and the 10-speed Top-2 transmissions produced by Eaton between 1996 and 2003.
- (66) While it appears that Mack may also produce some manual 9- and 10-speed transmissions appropriate for use in linehaul applications, Mack only incorporates these transmissions into a limited share of the trucks that it sells to end customers, and Mack does not sell these transmissions to other OEMs; accordingly, I exclude Mack transmissions from my computations of shares for the linehaul market. In addition, as discussed further below, the horizontal price-fixing agreement between Eaton and Mack, the right-of-first refusal provided by Mack to Eaton with respect to the potential sale of Mack transmissions to third parties, and the restrictions Eaton imposed on Mack's ability to sell its transmission business to third parties all further support excluding Mack's HD Transmissions from the linehaul transmission market share computations in the remainder of my analysis. Under the terms of the Eaton LTA, Mack's HD transmissions for use in linehaul applications would clearly be unable to prevent a "hypothetical monopolist" in the linehaul market from implementing a small but non-transitory increase in price.
- (67) Other manual and automated manual transmissions (in particular 13-, 15-, 18-speed, and LL manual, as well as 13- and 18-speed automated manual transmissions) are not good substitutes for the transmissions included in the linehaul market. The 13-, 15-, and 18-speed manual transmissions require more gear shifts than necessary in linehaul applications, which causes unnecessary fatigue and distraction for the driver.<sup>42</sup> While some individual owner operators or small, owner-operated fleets occasionally purchase 13-speed manual transmissions and use them in linehaul applications, this accounts for a relatively small segment of demand. It is not the strategy followed by the large fleets and leasing companies that own and operate most of the trucks used in linehaul applications, who do not perceive 13-speed manual transmissions to be economic substitutes for 9- and 10-speed linehaul transmissions. As noted in a Market Analysis document by Eaton: "These buyers typically specify manual 9- and 10-speed "fleet" transmissions behind engines with programmable horsepower and torque features. As these price sensitive fleets trade for new equipment, the

<sup>41</sup> Eaton also produces a small number of 7-speed transmissions with torque rating of 1450 lb-ft. In its classification of transmission models in product types, Eaton groups these 7-speeds transmissions with linehaul transmissions.

<sup>42</sup> Bob Werner, chief engineer of heavy trucks for International notes that: "day in and day out, it's much easier for drivers to navigate 10 gears than 13 or 18." He adds that: "There will still be some 18-speed users, but 90% to 95% of all future Class 8 manuals are going to be 10-speeds" (See Sean Kilcarr, "Shifting for Fuel Economy," *FleetOwner*, February 1, 2006)

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re-marketability of their truck is less due to the preference in the used truck market for higher torque and horsepower engines tied with multi-speed “performance” transmissions.”<sup>43</sup>

- (68) Furthermore, all of the alternative manual and automated manual transmissions with 13 speeds or more considered in this paragraph are less fuel efficient in linehaul applications than the transmissions included in the linehaul market. This is because these transmissions have shorter gear steps and higher torque ratings than required by the typical linehaul application.<sup>44</sup> Finally, 13-, 15-, 18-speed, and LL manual transmissions are significantly more expensive than 9- and 10-speed manual transmissions. Similarly, 13- and 18-speed automated manual transmissions are significantly more expensive than 10- and 12-speed automated manual transmissions.
- (69) An analysis of Volvo data books from August 1, 2000 through November 5, 2007 clearly illustrates this point.<sup>45</sup> For those trucks in which the standard transmission was an Eaton 10-speed manual transmission (the FRO-13210C model, a widely-used transmission in linehaul applications), the average upcharge for the optional Eaton performance manual transmissions, namely the 13-, 15-, 18-speed and LL manual transmissions, was \$2,122. This average upcharge can be compared with an average upcharge of \$756 for the optional Eaton linehaul manual transmissions, namely the 9- and 10-speed manual transmissions offered on the same trucks. Similarly with automated manual transmissions, the average upcharge for the optional 13- and 18-speed Eaton automated manual transmissions was \$9,140 compared with an average upcharge for the optional 10-speed Eaton automated manual transmissions offered on the same truck of \$5,470. See Figure 2 and Figure 3. These significant price differences provide a reasonable indication that the 13-, 15-, 18-speed, and LL manual and the 13- and 18-speed automated manual transmissions are not sufficiently good substitutes for the 9- and 10-speed manual and automated manual transmissions included in the linehaul market to be included in the same relevant product market.

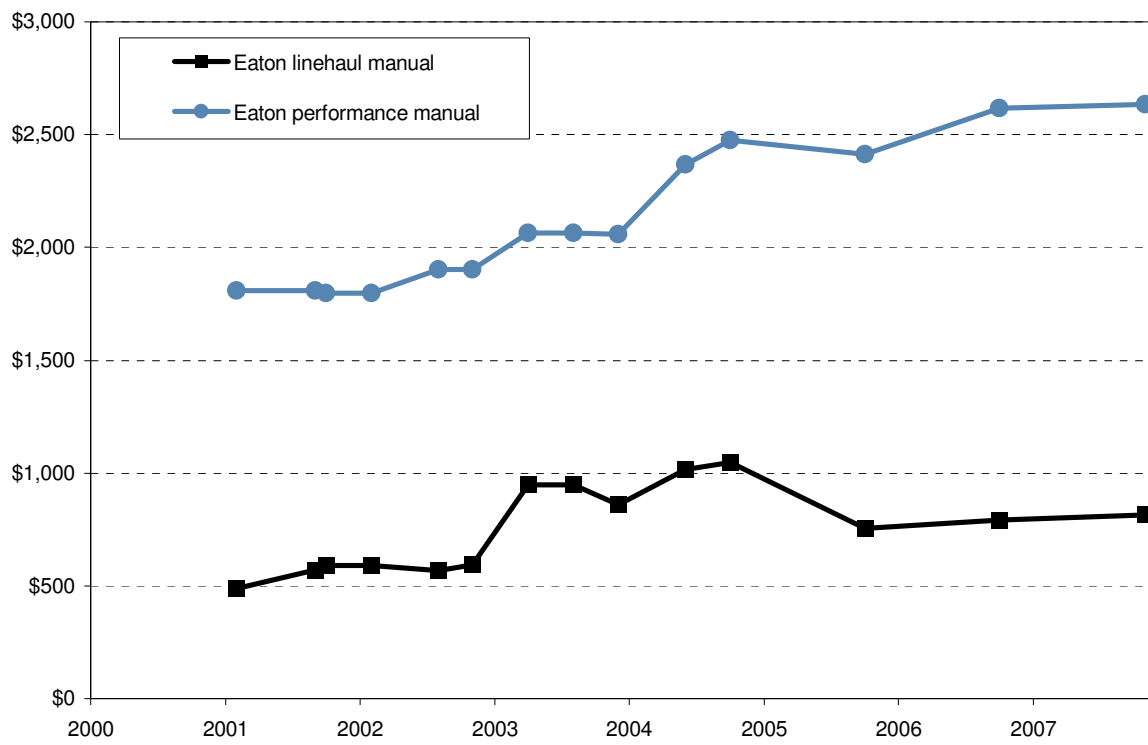
<sup>43</sup> See EAT00140820.

<sup>44</sup> David McKenna, marketing manager for engines, transmissions and axles at Mack Trucks notes that: “We’re trying to stay away from multi-speed [manual] transmissions and go to simple 6- and 10-speeds formats. The more gears you have, the narrower the shift range becomes; that can lead to horrendous fuel economy.” (See Sean Kilcarr, *Ibid.*)

<sup>45</sup> See VM 002238, VM 002901, VM 003641, VM 004352, VM 005020, VM 005739, VM 006546, VM 007384, VM 008234, VM 008894, VM 009550, VM 000263, VM 000564, VM 000847, VM 001164, VM 001668, VM 002059, VM 002089, and VM 002234.

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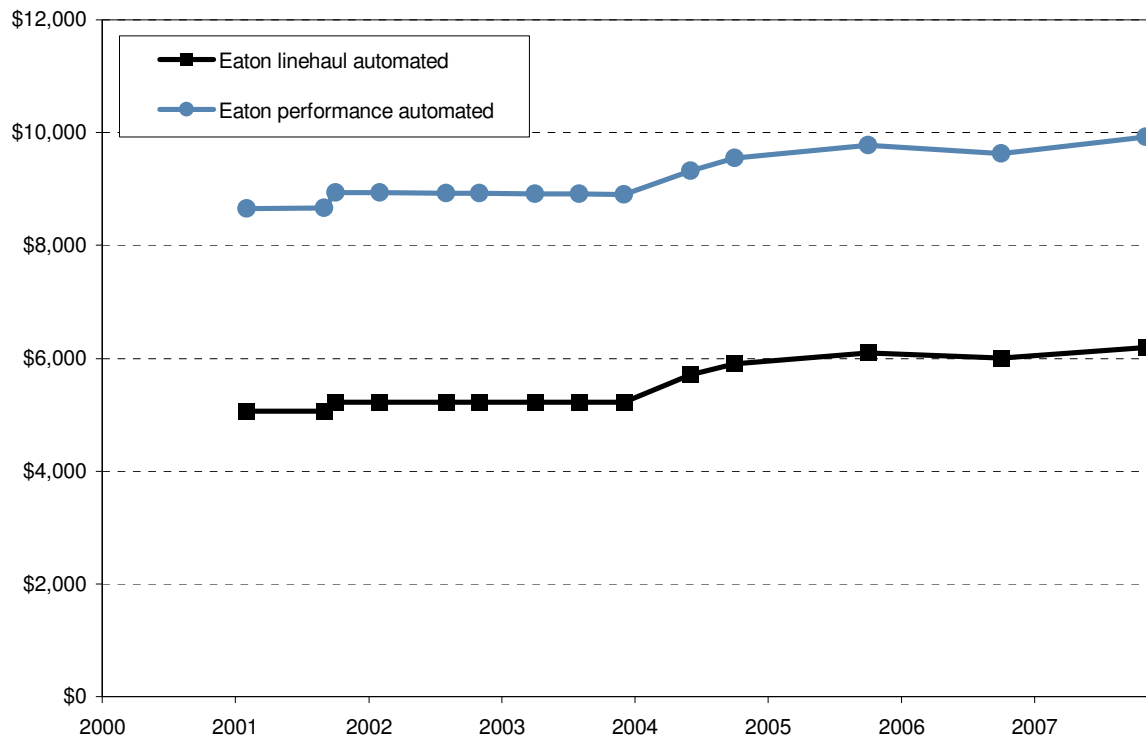
**Figure 2: Average upcharge comparison: linehaul manual v. performance manual**



Source: Bates White's calculation based on Volvo's data books, see footnote 45.

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**Figure 3: Average upcharge comparison: linehaul automated manual v. performance automated manual**



Source: Bates White's calculation based on Volvo's data books, see footnote 45.

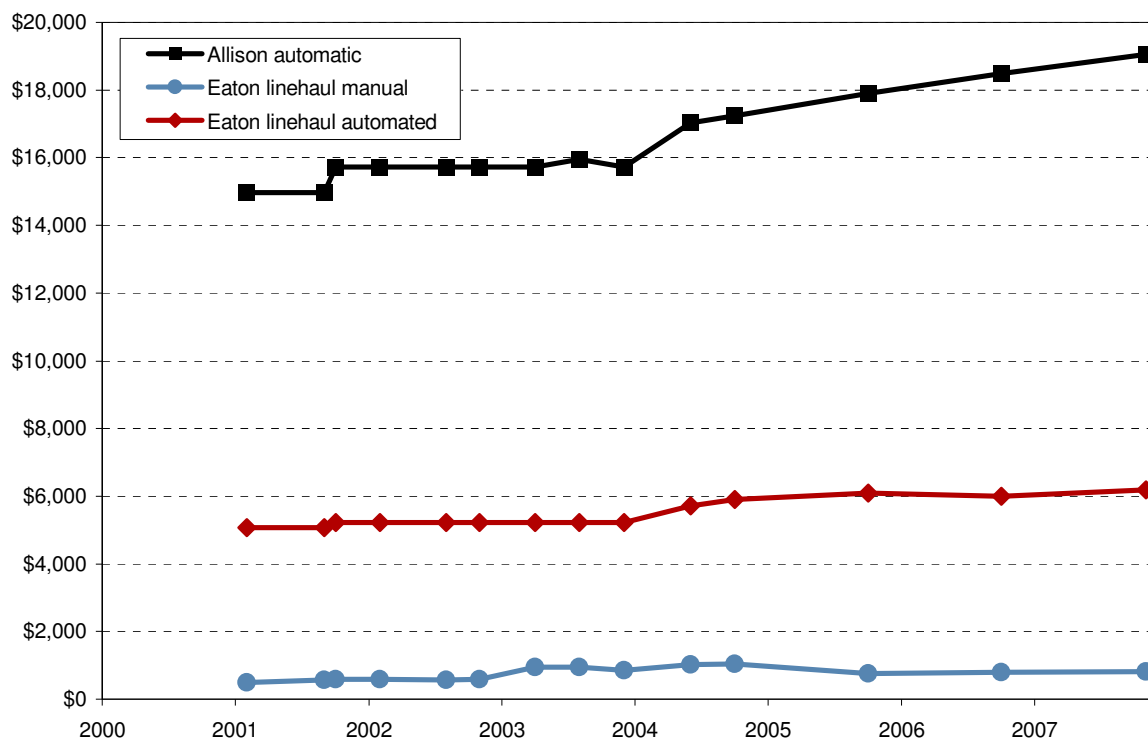
- (70) For the above reasons, I conclude that buyers are unlikely to substitute manual transmissions with more than 10 speeds and/or deep reductions (LL) and automated manual transmissions with more than 12 speeds for the transmissions included in the linehaul market, and thus I exclude those transmissions from the linehaul market.
- (71) The HD automatic transmissions produced by Allison are also very poor substitutes for the transmissions that are usually used in linehaul applications. The main reason for this is their inferior fuel efficiency and much higher price compared with the automated manual transmissions included in the linehaul market. In its 2004 Strategic Plan for the Truck Components Group, Eaton acknowledges the prevalence of automated manual as compared with automatic transmissions in the heavy duty fleet (*i.e.*, linehaul) segment that is “primarily due to their superior efficiency and lower acquisition costs relative to torque converters.”<sup>46</sup>

<sup>46</sup> See EATON-00230530. It should also be noted that in the same document Eaton discusses its competitors' offerings of heavy duty automated and automatic transmissions. Allison's transmissions are not mentioned in relation to the fleet (*i.e.* linehaul) segment, although they are mentioned in the same section in relation to the vocational segment (see Eaton-00230531.)

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- (72) The fact that the acquisition cost to the final user of an Allison heavy-duty automatic transmission is much higher than that of the transmissions included in the linehaul market is confirmed by an analysis of Volvo's data books from August 1, 2000 through November 5, 2007, similar to the comparison discussed above in Section 5.2.1. For Volvo trucks for which the standard transmission was a 10-speed manual Eaton transmission (the FRO-13210C model), the average upcharge for the optional Allison automatic transmissions with comparable torque was fully \$16,426. This average upcharge can be compared with an average upcharge of only \$756 for the other (optional) Eaton 9- and 10-speed manual transmissions and of \$5,470 for the Eaton (optional) automated manual transmissions. See Figure 4. These quite substantial price differences between the Allison automatic transmissions as compared with the 9- and 10-speed manual and automated manual transmissions included in the linehaul market further support the conclusion that they are in separate relevant product markets.

**Figure 4: Average upcharge comparison: Allison automatic v. Eaton linehaul manual and linehaul automated**



Source: Bates White's calculation based on Volvo's data books, see footnote 45.

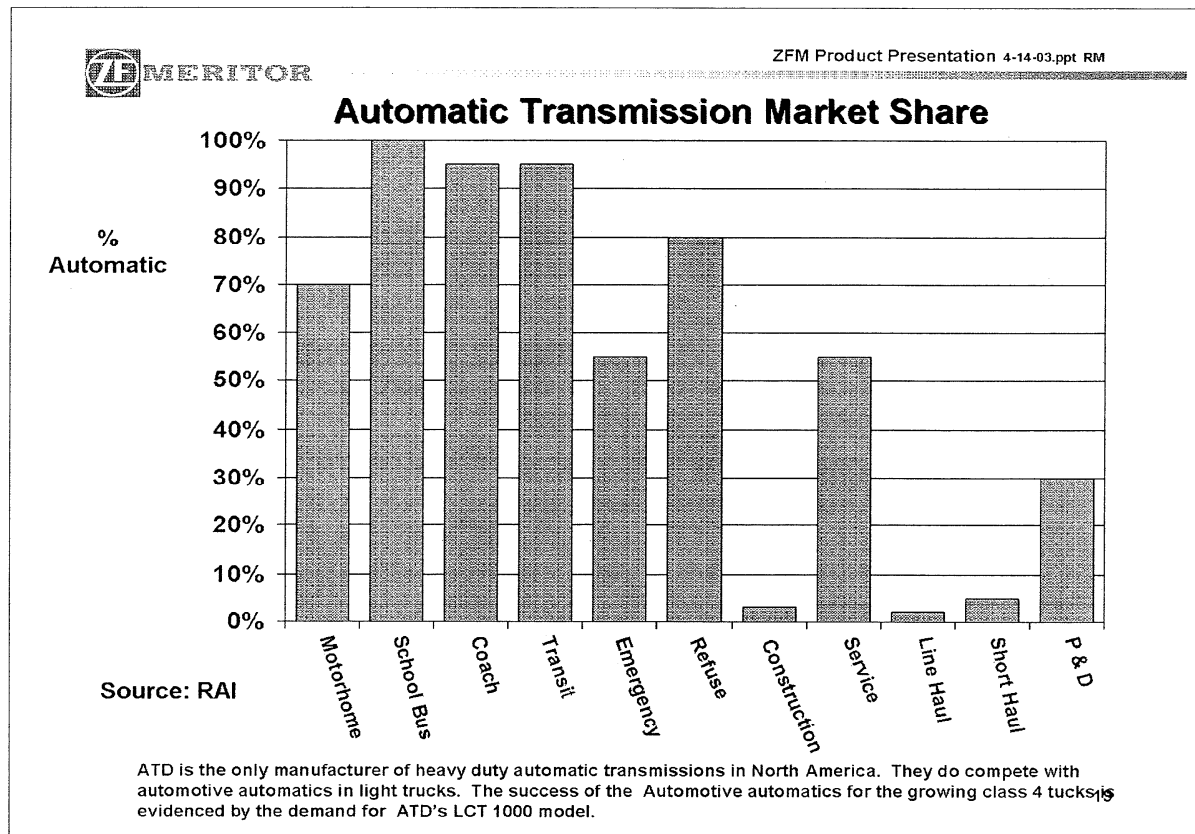
- (73) As shown in Figure 5, based on April 2003 data, even if there is some small segment of demand for Allison transmissions in linehaul applications, Allison's share of the heavy duty transmissions used in linehaul applications is for all practical purposes negligible



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(approximately 2%). All other applications listed in Figure 5 for Allison's automatic transmissions are "specialty" applications that are not included in either the linehaul or the performance market (discussed further below).

**Figure 5: Allison's share of the transmissions used in various applications**



Source: ZFMA0198240.

- (74) For the reasons above, I conclude that buyers are unlikely to substitute heavy duty automatic transmissions with torque converters used in specialty applications for the manual and automated manual transmissions included in the linehaul market, and thus I exclude automatic transmissions from this product market.

### 5.2.2. Market for HD Transmissions used in performance applications

- (75) This market includes the 13- and 18-speed manual transmissions, the low-low (LL) and 15-speed manual transmissions produced by Eaton, the convertible transmissions produced by Eaton, the 18-speed automated manual Autoshift transmissions produced by Eaton, and the 13-speed automated manual Ultrashift transmissions produced by Eaton since 2004. It is also appropriate to include in this market ZFM's "10-L" manual transmission that it developed, but never released, for the large "on-off highway" segment of the performance market. It is

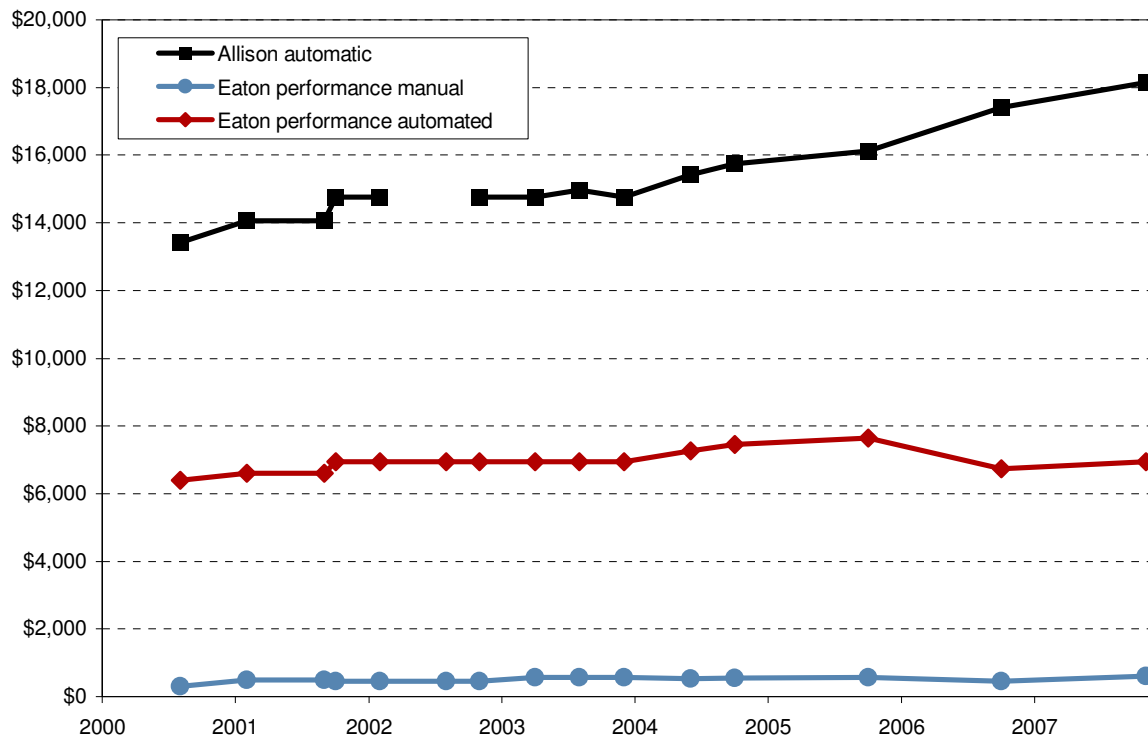
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also my understanding that ZFM had plans to further expand the use of its FreedomLine automated manual technology into performance applications, but as with its “10-L” manual transmission for this market, ZFM was forced to ultimately abandon these plans when it was unable to sell an adequate number of its current HD Transmissions after 2003.

- (76) While Mack also produces some HD Transmissions with the technical specifications and applications appropriate for the performance market, Mack only incorporates these transmissions into a limited share of the trucks that it sells to end customers, and Mack does not sell these transmissions to other OEMs; accordingly, I exclude Mack transmissions from the statistics related to the performance market discussed below. I also consider the horizontal price-fixing agreement between Eaton and Mack discussed further below to also support excluding Mack’s HD Transmissions from the performance market share computations in the remainder of my analysis. Under the terms of the Eaton LTA, Mack’s HD transmissions for use in performance applications would clearly be unable to prevent a “hypothetical monopolist” in the performance market from implementing a small but non-transitory increase in price.
- (77) Manual and automated manual transmissions with less than 13 speeds or without the deep reductions of manual LL transmissions are generally not suitable for the very demanding conditions of operation encountered in performance applications. In particular, the gear steps of 9- and 10-speed transmissions without deep reductions are too broad to allow trucks to efficiently climb roads with steep gradients or operate off-road and on rough terrain. For this reason, I exclude these transmissions from the performance market.
- (78) The heavy-duty automatic transmissions produced by Allison are also not viable substitutes for the manual and automated manual transmissions included in the performance market. Allison transmissions are significantly more expensive than the transmissions included in this product market, as is evident, for example, in the 2000–2007 Volvo data books. For those trucks on which the standard transmission offering was an Eaton manual LL transmission with a 1,450 lb-ft torque rating (the RTO-14908LL model)—a widely used transmission in on-off highway performance applications—the average upcharge for the optional Allison automatic transmissions with comparable torque rating was \$15,226. This average upcharge can be compared with an average upcharge of only \$496 for the other Eaton manual transmissions and of \$6,950 for the Eaton automated manual transmissions included in the performance market and offered on the same trucks. See Figure 6. This large price differential between the Allison automatic transmissions and those transmissions included in the performance market indicates that the Allison automatic transmissions belong to a different relevant product market.

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**Figure 6: Average upcharge comparison: Allison automatic v. Eaton performance manual and performance automated**



Source: Bates White's calculation based on Volvo's data books, see footnote 45.

- (79) Other documents provide additional evidence that Allison's automatic transmissions should not be considered in the same relevant product market as transmissions used in performance applications. In Eaton's internal documents prior to 2004, Allison was only mentioned as a competitor to Eaton in medium-duty transmissions, but not as a potential or actual competitor in HD Transmissions. Starting in 2004, there are some internal Eaton documents indicating that Eaton may have begun to perceive Allison as a potential competitor in a number of niche HD Transmission applications that Eaton describes as "vocational" or "off-road."<sup>47</sup> However, the Allison transmissions used in these applications are not good substitutes for the Eaton transmissions that I have included in the "on-off highway" segment of the performance market. While there may be small areas of overlap at the boundaries of any attempt to define a relevant product market, I have seen no evidence to suggest that Allison's automatic HD Transmissions are perceived by OEMs, truck customers, or the transmission manufacturers as being adequate substitutes for Eaton's HD transmissions used in performance applications in any significant degree.

<sup>47</sup> See, for example, two different drafts of Eaton's 2004 Strategic Plan, EATON-00230454 and EATON-00230531.

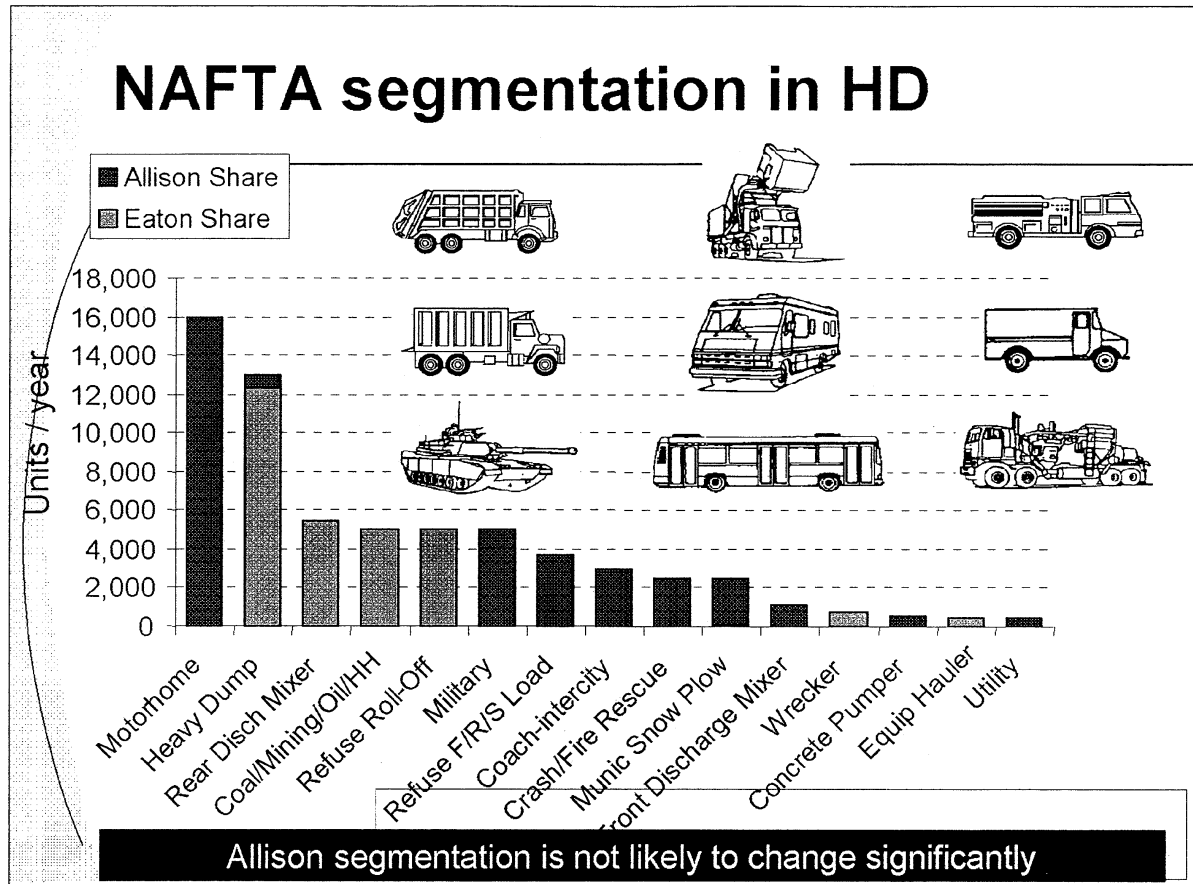
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- (80) As discussed above, HD Transmissions are highly differentiated products used in a number of highly differentiated applications, and if these differentiated applications are used to define more narrow product markets, it is clear that there are few, if any, such applications in which Allison's automatic HD Transmissions are perceived as economic substitutes for Eaton's performance transmissions. This is particularly evident in Figure 7, which reproduces a chart from an Eaton internal document. The chart shows that there is no overlap between the applications that use Eaton transmissions and those that use Allison transmissions, with the exception of a negligible Allison presence in the application labeled "Heavy Dump." The document analyzes the situation that prevailed in 2004 and states that "Allison segmentation is not likely to change significantly." The same document then states that, "Allison market share in NAFTA in MD [medium-duty] is dominant, in HD [heavy-duty] is increasing especially *in vocations not considered as our traditional target markets*" (emphasis added).<sup>48</sup>
- (81) The fact that both Eaton and the OEMs clearly recognized that Allison's automatic HD Transmissions do not constitute a competitive constraint on the ability of a "hypothetical monopolist" to increase prices of the performance transmissions is evident in a letter sent to PACCAR by Eaton on May 30, 2002: "Per the contract, we currently remove any and all Allison transmission sales in the share calculation due to the fact that Eaton does not have a product that competes directly with their automatic transmission. Our Autoshift product is an automated mechanical, making it comparatively different from the Allison automatic."<sup>49</sup>

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<sup>48</sup> See EATON-00220328

<sup>49</sup> See EATON-01409344.

**Figure 7: Allison and Eaton's shares in different applications**

Source: EATON-01124620 at 4622.

- (82) As mentioned above, while it may be possible to segment the broader performance market into two distinct markets for “severe-duty” and “on-off highway” performance applications, or even more narrowly defined markets for specific applications, such a distinction would not change my analysis and conclusions regarding the effects of Eaton’s conduct on competition in the relevant markets.

### 5.2.3. Market for HD automatic transmissions used in specialty applications

- (83) The market for heavy-duty automatic transmissions used in specialty applications includes the automatic transmissions produced by Allison. The applications in which these transmissions are used have very different performance requirements than the linehaul and performance applications discussed above, in that they generally require very frequent stops (e.g., refuse collection, city deliveries, city transit, and school buses), they generally do not require operation at high speeds (as with linehaul applications), and they generally do not require operation in demanding, high-torque, steep grade, off-road environments (as with

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performance applications). The need for trucks used in specialty applications to stop, start, and shift gears frequently makes manual transmissions poor substitutes for the automatic transmissions used in these applications. Finally, a significant number of vehicles used in specialty applications are operated by municipalities that typically employ less experienced drivers than private operators and may be less sensitive to the cost of transmissions than purchasers of trucks used in linehaul and performance applications, and in fact they may require their trucks to be specified with automatic transmissions. Thus, it is reasonable to expect purchasers of automatic HD Transmissions for specialty applications to be willing to pay a significant price premium over manual and automated manual transmissions, and it is unlikely that they will switch to the latter in response to a “small but significant, non-transitory” increase in the price of automatic transmissions. For these reasons, I conclude that HD Transmissions used in specialty applications constitute a separate relevant product market. While a further segmentation of HD Transmissions used in specialty applications into more narrowly defined product markets may also be reasonable, narrowing the definition of specialty markets would not affect my analysis of the competitive effects of the conduct at issue, and therefore I rely on this broader definition of the specialty market.

### 5.3. Relevant geographic market

- (84) The relevant geographic market for the HD Transmissions at issue in this case is comprised of the countries that participate in the North American Free Trade Agreement (“NAFTA”), *i.e.*, the United States, Canada, and Mexico. There are a number of reasons why HD Transmissions manufactured and sold in other countries are poor substitutes for HD Transmissions manufactured and sold in NAFTA, including: (1) the need for a transmission manufacturer to have an adequate sales, distribution, and after-sales service network in North America in order for its products to be perceived by OEMs and end customers as substitutes for HD Transmissions with such a North American network; (2) the fact that manual HD Transmissions used in NAFTA are based on an asynchronous shifting system, whereas the manual HD Transmissions used in other parts of the world are based on a synchronous shifting mechanism; (3) the need for additional modifications to the HD Transmissions engineered and manufactured for use outside NAFTA in order for them to be incorporated into heavy-duty trucks for sale in NAFTA; and (4) the fact that HD Transmissions imported from outside NAFTA would be subject to considerable freight charges, other transportation-related costs, and potentially duties and other importation-related charges that may prevent them from disciplining the prices of a “hypothetical monopolist” within NAFTA.
- (85) North American OEMs and end customers (truck purchasers) are willing to use transmissions from a given manufacturer only if the manufacturer has an adequate sales, distribution, and after-sales service network in North America. Transmissions (and other drivetrain



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components) experience occasional failures, and the reliability of the after-sales assistance offered by a transmissions manufacturer is a factor in an OEM's and an end customer's purchase decisions. Therefore, simply importing transmissions from a manufacturer that does not have a support network in North America is unlikely to be a viable alternative transmission supply option for OEMs or their end customers.

- (86) The manual transmissions used in Europe and most of the rest of the world are based on a "synchronous" shifting mechanism, whereas the manual transmissions used in North America are based on an "asynchronous" shifting mechanism. When the driver of a truck with a synchronous transmission depresses the clutch pedal and disengages the driveshaft from the engine crankshaft, an electronic mechanism adjusts the RPM of the engine crankshaft and the driveshaft so that they can be re-engaged with a different gear ratio. With this type of transmission, the driver needs to depress the clutch only once in order to shift gears. By contrast, an asynchronous transmission does not synchronize the RPM of the engine crankshaft and driveshaft electronically and requires the driver to perform the synchronization. In particular, after having disengaged the engine crankshaft and the driveshaft, the driver must adjust the RPM of the engine and the speed of the truck before shifting into a different gear. With asynchronous transmissions, the driver must therefore depress the clutch pedal twice ("double-clutching").
- (87) The synchronous transmissions used in Europe and other parts of the world are poor substitutes for the asynchronous transmissions used in NAFTA for several reasons. Perhaps most important, the truck engines and chassis used by truck customers in the NAFTA region are designed to operate in conjunction with asynchronous transmissions; re-engineering them so that they can operate in conjunction with synchronous transmissions would require significant investments and time.<sup>50</sup> In addition, in order for synchronous and asynchronous transmissions to be considered substitutes in the NAFTA region, it would require a significant investment in retraining North American truck drivers, who are trained to operate asynchronous transmissions and may be reluctant to switch to synchronous transmissions. Synchronous transmissions also generally cost more than asynchronous transmissions, a reflection of the fact that the "single-clutching" benefit of synchronous transmissions comes as a result of additional costs related to product design, engineering, and production costs, relative to the "double-clutching" of asynchronous transmissions.
- (88) The distinction between synchronous and asynchronous shifting does not apply to automated manual transmissions, especially to two-pedal transmissions that do not have a clutch pedal,

<sup>50</sup> In its approval of the joint venture between ZF and Meritor the European Commission states that: "Transmissions for NAFTA-style trucks differ substantially from European-style trucks [sic]. NAFTA-style trucks are subject to different road and regulatory requirements, i.e. longer straight hauls with less gear shift activity and no prescribed maximum length for the vehicle." See Regulation (EEC) No 4064/89 Merger Procedure, August 2, 1999.

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since the electronic systems that are built-in in these transmissions synchronize the RPM of the engine crankshaft and the driveline without the driver's intervention. However, it is also the case that significant investments and time would be required for the type of automated manual transmissions used in other geographic markets to be adapted for use in North American trucks, since the two types of transmission use different voltages (12 volts in North America and 24 volts in Europe) and different standards for communicating with the engine.<sup>51</sup>

- (89) HD Transmissions imported from outside NAFTA would also likely incur significant duties, freight, and other transportation costs that can be sufficiently large to make them poor substitutes for HD Transmissions manufactured within NAFTA, especially for OEMs that require a reliable "just-in-time" supply of HD Transmissions.
- (90) My conclusion that NAFTA constitutes a relevant geographic market, distinct from the rest of the world, for the products at issue is confirmed by a number of Eaton's internal documents in which Eaton discusses its strategic plans and past performance separately for the NAFTA market and other geographic markets.<sup>52</sup> Furthermore, Eaton's contracts with the OEMs are either focused on NAFTA or distinguish between NAFTA and other regions of the world. Eaton also has different sale teams and divisions for different regions of the world. It is appropriate to take into account Eaton's recognition of and focus upon NAFTA as a distinct geographic region for its HD Transmission business in concluding that NAFTA is the relevant geographic market in assessing Eaton's conduct at issue in this case.

## 6. Eaton has monopoly power in the relevant markets

### 6.1. Analytical framework

- (91) In many industries, firms may be able to differentiate their products from those of their competitors and exercise some degree of market power, defined as the ability to raise and maintain price above marginal cost. In industries characterized by long-run economies of scale—*i.e.*, in which marginal cost lies below long-run average cost—some degree of market power is indeed necessary for firms to break even. However, to the extent that vigorous competition constrains firms to price at a level that is merely sufficient to cover their long-

<sup>51</sup> See the deposition of James Pohl, currently OEM Account Manager at Meritor, at 51:10–53:3. During most of the relevant time period Mr. Pohl was ZF Meritor's Engineering Manager at Freightliner.

<sup>52</sup> See, for example, Eaton's Truck Group 2006 Strategic Plan (EATON-00716788).



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run average cost (including an appropriate measure of the cost of capital invested in the firm), these industries can still be characterized as being in a competitive equilibrium.<sup>53</sup>

- (92) A firm with monopoly power is not, however, constrained by the vigorous competition of rivals and therefore has much more control over the market in which it operates than a firm with a modest degree of market power.<sup>54</sup> Monopoly power is typically defined as the power to control prices and exclude competition.<sup>55</sup>
- (93) As described by the United States Department of Justice (“U.S. DOJ”),<sup>56</sup> “monopoly power is conventionally demonstrated by showing that both (1) the firm has (or in the case of attempted monopolization, has a dangerous probability of attaining) a high share of a relevant market and (2) there are entry barriers—perhaps ones created by the firm’s conduct itself—that permit the firm to exercise substantial market power for an appreciable period.”<sup>57</sup> As I discuss further below, in the present case, the data show that Eaton has an exceptionally high share of the relevant product markets, there are significant entry barriers, and Eaton’s LTAs with all of the OEMs in the market have created an additional barrier to entry.
- (94) In addition to high market shares and barriers to entry, other indicia of monopoly power can also be considered when available. Such indicia may include the persistence of supra-competitive profit margins, the existence and seriousness of actual anticompetitive effects, and comparisons of price levels and trends in the monopolized market with those in comparable markets that are generally considered to be competitive.

## 6.2. Market shares

- (95) While there is no bright-line standard of the market share required to establish monopoly power, the U.S. DOJ and the courts have concluded that if a firm has maintained a market share in excess of two-thirds for a significant time period and the firm’s market share is unlikely to be eroded in the near future, this establishes a “rebuttable presumption” that the

<sup>53</sup> Economists refer to this type of competition as “monopolistic competition.” See Chamberlin, Edward, *The Theory of Monopolistic Competition*, Cambridge, Mass.: Harvard University Press, 1933; Spence, Michael, “Product Selection, Fixed Costs, and Monopolistic Competition,” *Review of Economic Studies* 43 (1976): 217–235; Dixit, Avinash K. and Joseph E. Stiglitz, “Monopolistic Competition and Optimum Product Diversity,” *American Economic Review* 67, (1977): 297–308; and Salop, Steven C. “Monopolistic Competition with Outside Goods,” *Bell Journal of Economics* 10 (1979): 141–156.

<sup>54</sup> In *United States v. E. I. du Pont de Nemours & Co.* (*Ibid.*), the Supreme Court held that “[m]onopoly power under Section 2 requires, of course, something greater than market power under Section 1.”

<sup>55</sup> Supreme Court, *Eastman Kodak v. Image Technical Services Inc.*, 504 U.S. 451, 481 (1992).

<sup>56</sup> U.S. Department of Justice, *Competition and Monopoly: Single-Firm Conduct under Section 2 of the Sherman Act*, (2008). The report can be accessed at: [www.usdoj.gov/atr/public/reports/236681.htm](http://www.usdoj.gov/atr/public/reports/236681.htm).

<sup>57</sup> *Id.* at 21 n. 16 (citing cases).

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firm possesses monopoly power.<sup>58</sup> Under this standard, and any other reasonable alternative standard, Eaton's exceptionally high shares of the relevant market should establish that Eaton has monopoly power in the relevant markets for HD Transmissions used in linehaul and performance applications.

#### **6.2.1. Eaton has monopoly power in the linehaul market**

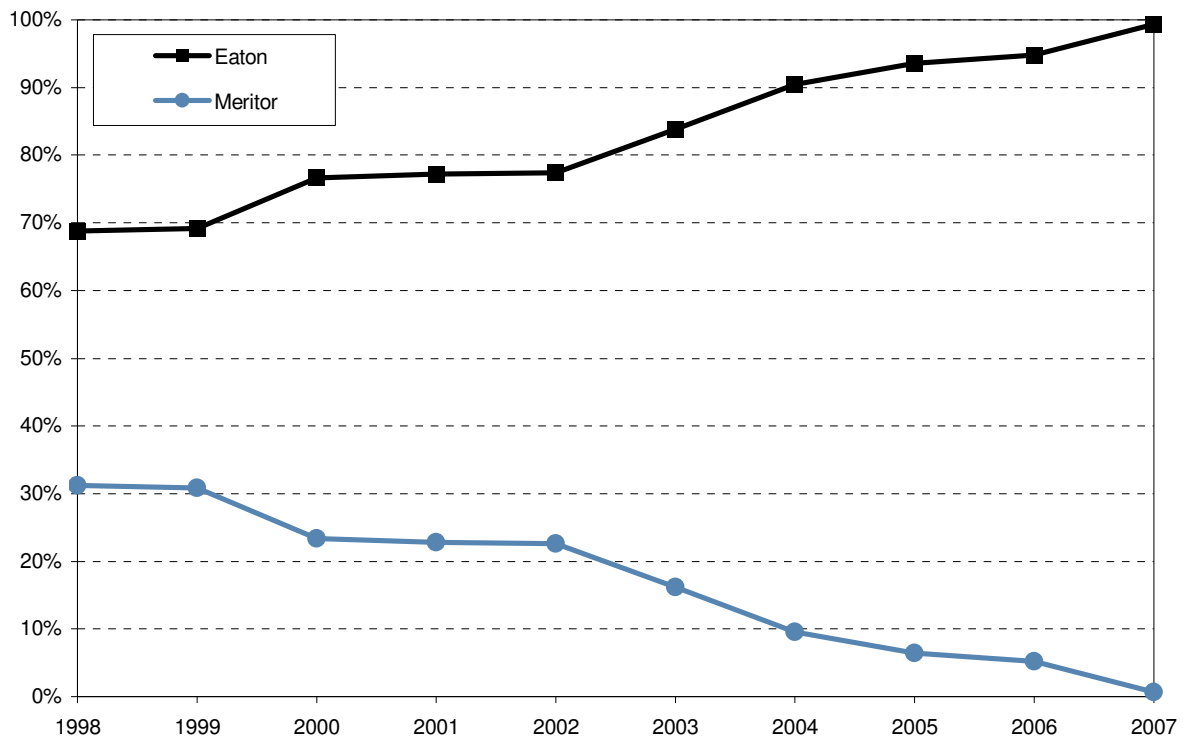
- (96) Figure 8 shows market shares for the NAFTA market for heavy duty transmissions used in linehaul applications. Eaton has had a market share in excess of 70% for each of the last ten years. Indeed, Eaton's market share was well above that level for most of this period, staying just below 80% during 2000–2002 and growing rapidly towards 100% after 2002.<sup>59</sup> As discussed further below, I conclude that this growth in Eaton's market share during its "OEM partnership" period is a result of Eaton's anticompetitive conduct and its foreclosure of ZFM from this market.

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<sup>58</sup> U.S. Department of Justice, *Competition and Monopoly: Single-Firm Conduct under Section 2 of the Sherman Act*, (2008) at n. 40 (citing authority).

<sup>59</sup> The shares in the table have been calculated using Eaton's and ZF Meritor's sales data. See EATON-01286393 and ZFMFD0001-ZFMFD0024.

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**Figure 8: Market shares in the NAFTA market for heavy duty linehaul transmissions (units), excluding Mack's transmissions**

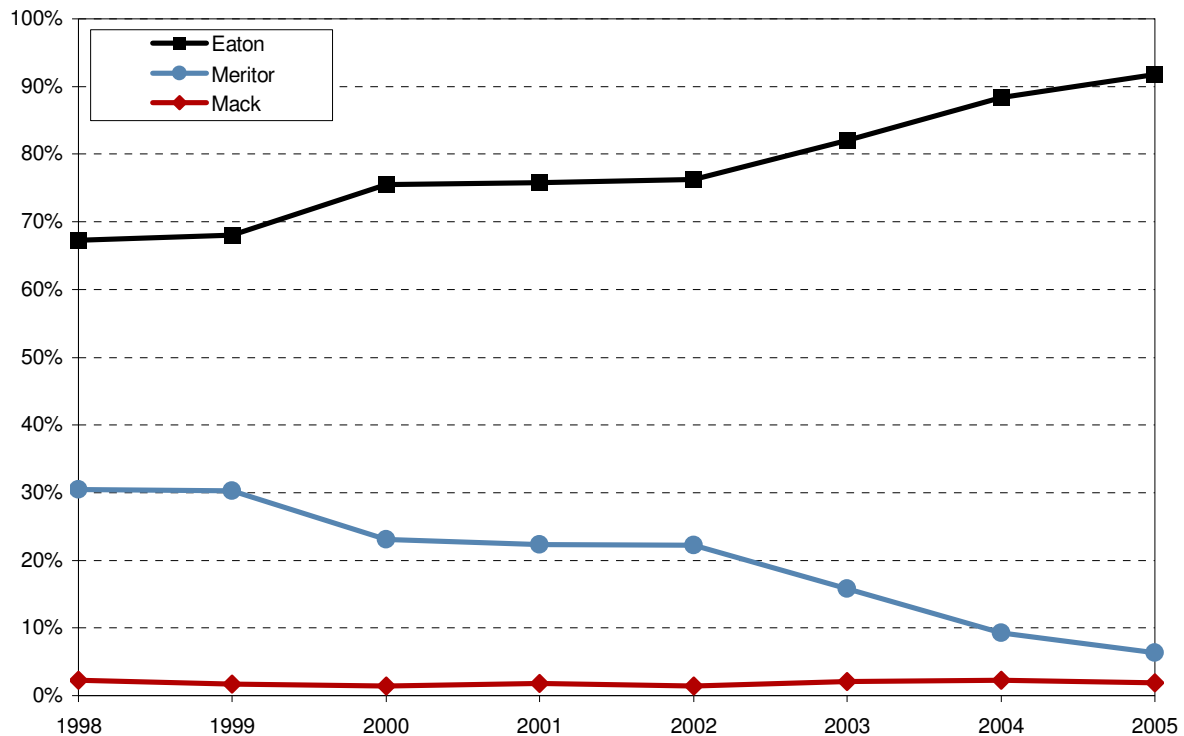
Source: Eaton and ZF Meritor sales data. See EATON-01286393 and ZFMFD0001-ZFMFD0024.

- (97) The shares shown in Figure 8 are calculated excluding the linehaul transmissions manufactured by Mack. As noted above, Mack installs its transmissions only on the trucks that it sells to its end customers, and it does not sell them to other OEMs. Therefore, although Mack's transmissions could potentially constitute a competitive constraint for Eaton at Volvo/Mack itself (in the absence of the horizontal price-fixing agreement between Eaton and Volvo/Mack discussed in Section 8.4 below), Mack's HD Transmissions could not constrain Eaton's exercise of monopoly power vis-à-vis the other three OEMs. Furthermore, Mack's HD Transmissions have also not constrained Eaton's exercise of monopoly power vis-à-vis Volvo/Mack, either, given Mack's continued dependence on Eaton for HD Transmissions for certain applications in which neither Mack nor other manufacturers such as ZFM offer a competing alternative. Including Mack's transmissions in the calculation of market shares for the overall linehaul market would therefore be inappropriate, as it would understate Eaton's ability to exercise monopoly power in this market. Nevertheless, in order to show that the inclusion of Mack's transmissions would not materially affect my conclusions regarding Eaton's monopoly power, Figure 9 shows the shares of the linehaul market if Mack's transmissions were included in the calculations. As can be seen, Mack's share of sales in the overall linehaul market would be approximately 2% over the 1998–2005

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time period for which data on Mack's transmissions are available, and therefore including these transmissions on Eaton's market share has no impact on the conclusion that Eaton has monopoly power in this market.<sup>60</sup>

**Figure 9: Market shares in the NAFTA market for heavy duty linehaul transmissions (units), including Mack's transmissions**



Source: Eaton and ZF Meritor sales data and data on Mack usage of its own transmissions. See EATON-01286393, ZFMFD0001–ZFMFD0024, and VM2\_00002523.

### 6.2.2. Eaton has monopoly power in the performance market

- (98) Eaton's market share in the NAFTA market for performance transmissions has been equal or close to 100% for the entire period 1998–2007.<sup>61</sup> For the same reasons that I discuss in paragraph (97), I do not consider it to be appropriate to include Mack's transmissions in the calculation of overall market shares for purposes of assessing whether Eaton has monopoly power in the performance market. Nevertheless, even if I include the transmissions manufactured by Mack and used in performance applications in the calculation of the

<sup>60</sup> In allocating Mack's transmissions to the linehaul and performance markets I have followed the classification used by Mack in an internal spreadsheet that tracks Mack's usage of its transmissions in its trucks (see VM2\_00002523).

<sup>61</sup> Source: Eaton and ZF Meritor sales data. Until 2001 ZFM manufactured a very small number of 13-speed manual transmissions that could be included in the performance market. The share of these transmissions in the performance market during the relevant period is, however, negligible as it never rises above 0.2% after 1998.

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performance market shares, Eaton's share of this market would still remain well above 90% for the entire 1998–2005 time period for which data on Mack's transmissions are available.

- (99) The conclusion that Eaton has complete monopoly power in the performance market, unconstrained by Mack or any other actual or potential competitor, is confirmed by an Eaton internal document dated June 2003 that states: "Eaton has no competition on performance models."<sup>62</sup>

### **6.2.3. The conclusion that Eaton has monopoly power is robust to alternative market definitions**

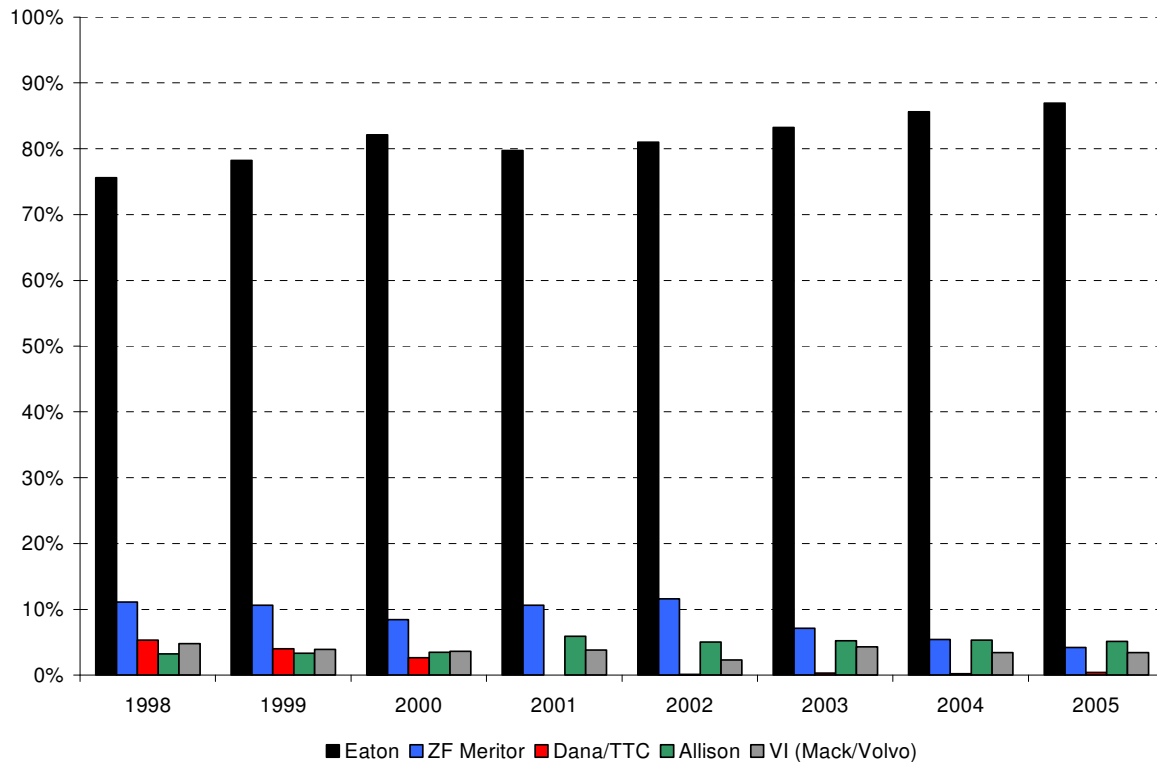
- (100) While I conclude that it is appropriate to define separate relevant product markets for HD Transmissions used in linehaul, performance, and specialty applications, Eaton still would have sufficiently high market shares to create a "rebuttable presumption" of monopoly power, even if one were to define the relevant markets more broadly. For example, if the relevant market were defined to include all HD Transmissions used in Class 8 trucks for the NAFTA region, Eaton's share would still be equal to or greater than 80% for the entire 2000–2005 period, as shown in Figure 10. However, as discussed above, I do not consider such a broad market definition to be appropriate, as many of the products included in this broad alternative market definition are not substitutes or are very poor substitutes for one another.

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<sup>62</sup> See EATON-00010557, p. 2. For a similar statement see also a letter sent by David Renz of Eaton to Tom Lundhal of PACCAR on December 9, 2002 (EATON-01405704): "we continue to offer a complete product line including performance and on/off highway transmission products that have no current competitive alternative and are purchased by 64% of PACCAR's customers."

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**Figure 10: Eaton's share of NAFTA sales of HD transmissions used in Class 8 trucks (dollars)**



Source: EAT00096835.

### 6.3. Barriers to entry

- (101) Entering the markets for HD Transmissions requires a significant portfolio of patents, significant capital investments, an extensive sales, distribution, and after-sales service network, and a recognized brand name, all of which constitute significant barriers to entry. Furthermore, since the four OEMs control access to final users of HD Transmissions, a manufacturer of HD Transmissions must secure a significant and reasonably stable business relationship with one or more OEMs in order to successfully launch a product in the North American market.
- (102) From the beginning of Eaton's "OEM partnership" period in 2000, there has been no significant actual or potential independent manufacturer of HD Transmissions with the portfolio of patents and the sales and support network necessary to enter the market in a timely manner without the support of an established North American manufacturer. Furthermore, as demonstrated more fully below, even if a potential entrant were able to acquire the necessary patent portfolio and either build a sales and support network or find an established North American partner with such a network (as ZF did with Meritor), Eaton's

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LTAs and anticompetitive actions would deny it access to the OEMs, the only available distribution channel for transmission manufacturers to sell their products (since truck purchasers do not buy trucks without transmissions from the OEMs and transmissions directly from the transmission manufacturer). As discussed in more detail below, while vertical integration into the production of transmissions by the OEMs may be a theoretical possibility, vertical integration by the OEMs into transmissions at prevailing price levels does not appear to be an efficient or profitable business model for the production of HD Transmissions, nor is it immune from the anticompetitive consequences of Eaton's LTAs and its monopoly power in the relevant markets.

- (103) Despite the lack of any significant entry into the relevant HD Transmission markets in NAFTA since 1989 (*i.e.*, other than ZFM), Eaton incorrectly contends in response to the Plaintiff's Interrogatory that "the recent apparent entry into North America of several new transmission suppliers, including Aisin, a Japanese manufacturer, SFGW, a Chinese manufacturer, and Caterpillar, Inc. demonstrates that competition is alive and well in the Class 8 truck transmission market in North America."<sup>63</sup> The evidence does not support Eaton's contention. Aisin Seiki, the Japanese manufacturer, has never sold any HD Transmissions directly in the NAFTA market. While some Aisin transmissions have been installed on Fuso trucks, which Freightliner bought and then rebranded as Sterling trucks to import into the NAFTA market, these are "typically medium- or light-duty transmissions."<sup>64</sup> SFGW, the Chinese manufacturer, has also never entered the NAFTA market, nor does it appear to be a viable potential competitor. When negotiating its 2008 contract with Eaton, VTNA stated the following: "We also looked at what's happening in the emerging [Asia] markets, but that supply base is not ready to, in our opinion to enter into the North American market at this point in time" for reasons related to "manufacturing locations, delivery, quality, different set of standards of what's acceptable."<sup>65</sup> Caterpillar is a major manufacturer of construction and mining equipment and heavy-duty diesel engines. While Caterpillar has manufactured some transmissions (its medium-duty CX28, heavy-duty CX31, and super-heavy-duty CX35 transmissions), they are all automatic transmissions that are not included in the relevant markets for HD Transmissions used in linehaul and performance applications as defined above.<sup>66</sup> Furthermore, I have seen no evidence to suggest that any of the OEMs, end customers, or HD Transmission manufacturers consider Caterpillar transmissions to be significant substitutes for the Eaton HD Transmissions at issue in this case. Caterpillar also announced in June 2008 that it would exit the North American truck engine business by

<sup>63</sup> See Defendant's Response to Plaintiff's First Set of Interrogatories, p. 5.

<sup>64</sup> See Sharp deposition, 25:23 –027:10.

<sup>65</sup> See Louva deposition, 194:4 –195:10.

<sup>66</sup> See <http://ohe.cat.com/cda/layout?m=136641&x=7>.

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2010,<sup>67</sup> and since I expect any sales of Caterpillar HD Transmissions to be sold as part of an integrated Caterpillar powertrain, I interpret this to mean that Caterpillar will also exit the HD Transmission business as well (to the limited extent one would ever consider it to have been in the HD Transmission business in the first place).

### **6.3.1. Patents**

- (104) Patents are widely recognized by economists and the courts as being a potential barrier to entry. Eaton holds a large number of patents protecting its transmissions and has been very active in suing other transmission manufacturers—including Meritor—for patent infringement. As discussed above, Eaton’s active patent litigation and threat of litigation to protect its patents has either deterred or limited the effectiveness of entry by independent and vertically integrated manufacturers, and it has significantly raised the legal costs and uncertainty associated with market entry.<sup>68</sup> Indeed, Eaton’s threat of patent enforcement against Mack was an explicit provision of its 1997 LTA with Mack that limited Mack’s ability to either license its transmission technology or sell its transmission business to a third party, as discussed in more detail below.

### **6.3.2. Local sales, distribution, and after-sales service network**

- (105) In order to successfully enter the market, a manufacturer of HD Transmissions must be able to offer an extensive and reliable sales, marketing, distribution, and after-sales service network, not only in order to effectively work with the OEMs, but also in order to work directly with truck purchasers. As commercial operators in a highly competitive and time-sensitive industry, truck purchasers require responsive repair and potentially broader fleet technical support if a transmission fails on one of their trucks. Transmission manufacturers also need a sales and marketing network in order to engage in “pull-through” marketing activities—including the use of financial incentives—directed at end customers who purchase trucks from the OEMs (directly or indirectly through dealers). “Pull-through” marketing activities can only be carried out with a sizeable marketing and sales force that is in direct contact with end customers. Setting up and maintaining such a marketing and sales force involves significant fixed costs, as does setting up and maintaining a capable and efficient after-sales service network, and it would require a substantial period of time for a new entrant to develop and establish an adequate sales and after-sales service network. A potential new entrant would therefore need to make significant investments in such a network—both in terms of time and money—before entering the markets for HD Transmissions.

<sup>67</sup> See [http://bulktransporter.com/news/CAT\\_Navistar\\_alignment/index.html](http://bulktransporter.com/news/CAT_Navistar_alignment/index.html)

<sup>68</sup> EATON00380917–918.



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#### 6.4. Vertical integration by OEMs into transmissions not a viable competitive threat to Eaton

- (106) Vertical integration by the OEMs into HD Transmissions has not succeeded in eroding Eaton's monopoly-level market shares. Even the threat of potential vertical integration by the OEMs has not provided a competitive constraint on Eaton's pricing behavior, in the way in which a competitor such as ZFM, for example, provided a competitive constraint on Eaton before being foreclosed from the market by Eaton's exclusionary conduct.
- (107) I also have not seen evidence that it would have been financially viable for the heavy-duty truck OEMs to vertically integrate into the development and manufacturing of a full line of HD Transmissions for their vehicles in the North American market. Although at some point, Freightliner appears to have planned to eventually produce in-house some of the automated manual transmissions for their heavy duty trucks, this has not happened up to the present. Indeed, Freightliner expressed skepticism about whether it would be profitable to vertically integrate into the production of truck components other than the engine.<sup>69</sup> With regard to Volvo/Mack, as discussed in Section 8.4 in more detail, Mack attempted to effectively *divest* its transmission business to Meritor, but was prevented from doing so by Eaton: in the mid-1990s, Meritor attempted to license or acquire Mack's HD Transmission technology, but the threat of Eaton's patent enforcement actions and retaliatory price increases against Mack as a result of such a transaction prevented the transaction from being completed. While Volvo recently introduced its automated manual I-shift in 2007, it still purchases a large fraction of its transmissions from Eaton, despite its acquisition of Mack in 2001.
- (108) Eaton also did not perceive vertical integration by the OEMs as a competitive threat to its transmission business, especially given Eaton's LTAs. In an internal review of Eaton's relationship with Freightliner, Eaton lists "strong defense against vertical integration" as one of the benefits it derives from the LTAs.<sup>70</sup> This statement confirms that Eaton was well aware that its LTAs with the OEMs constituted a barrier to vertical integration, as any OEM that considered vertically integrating in the production of heavy duty transmissions would have been penalized by the loss of substantial rebates, unless it could develop a full product line to be substituted for Eaton's transmissions in a very short period of time, which was clearly highly unlikely.

<sup>69</sup> See EATON-00216047, p. 2: "Rainer [Schmueckle, of Freightliner.] stated that he believed that engine integration was the model that was here to stay. He called the engine the soul of the truck. He was much less passionate regarding VI [vertical integration] in the rest of the truck. His statement that long-term, transmissions and axles might not be a business that MBCV [Mercedes Benz Commercial Vehicles] would hold as core was quite telling. The statement indicated to me that he was not being lukewarm solely for our benefit. We have heard from several sources that PTU can not significantly reduce the installed cost of heavy tandem axle with their VI products. Some within the Freightliner ranks are beginning to ask why this strategy is being pursued."

<sup>70</sup> See EATON-00010557, p.3.

### 6.5. Eaton's long-term agreements increased barriers to entry in the relevant markets

- (109) In addition to the pre-existing barriers to entry that exist in the relevant markets, and Eaton's apparent ability to use its monopoly power and threat of patent enforcement to prevent a new entrant from expanding its product portfolio, Eaton has been able to increase and exacerbate the barriers to entry with its LTAs and other actions. In its 1999 Global Sales and Marketing Strategic Plan, Eaton made explicit its intention of raising and/or maintaining barriers to the possible entry of Meritor, ZF, and vertically integrated OEMs by adopting a three-pronged strategy, including specifically "Partnering with OEM's—Long Term Agreements."<sup>71</sup> Most recently, Eaton provided an even clearer statement demonstrating that its LTAs with the OEMs were a significant barrier to entry that it could "leverage" against either ZF or other potential new entrants: in response to the questions, "What if SFGW enters NAFTA with a major OEM?" and "What if ZF grows in NAFTA through a NAFTA/European OEM partnership?", Eaton states that it would "Leverage NAFTA LTAs."<sup>72</sup> Perhaps Eaton's clearest expression of its view of the LTAs as a barrier to entry is in the following: "Eaton actions... Create higher barrier to entry through OEM long term agreements."<sup>73</sup> In Section 10 below, I discuss further the extent to which Eaton's LTAs allow Eaton to limit competitive entry, given Eaton's monopoly power in the relevant markets.

### 6.6. Profit margins

- (110) Profit margins can also be additional indicia of market power. On average, over the period 2000–2008, Eaton's average operating profit margin<sup>74</sup> is approximately 16%, and it is much higher over the period 2004–2008 (reaching 24.3% in 2006<sup>75</sup>). For purposes of comparison, I have computed the operating margin for a set of 39 publicly-traded companies listed in the Compustat database whose primary industry classification is listed as "Auto Parts & Equipment."<sup>76</sup> The median profitability of this group of companies over the period 2005–2007 was only 4%, far below Eaton's operating margin of 16% for 2000–2008. In fact, the profitability of Eaton's HD Transmissions business is well over the 95<sup>th</sup> percentile of the profitability of this group of companies, which is equal to 12.8%. ArvinMeritor, one of the companies in this sample, reported an operating profit margin (across all business segments) of only 2.4%.

<sup>71</sup> See EATON-00688920, p. 16.

<sup>72</sup> Eaton-00153616–634, at 618.

<sup>73</sup> Eaton-00034682–717, at 701.

<sup>74</sup> Operating Margin = Operating Profit/Net Sales.

<sup>75</sup> Eaton-00304441.

<sup>76</sup> Details of these companies are provided in Appendix C.

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- (111) As noted above, in its performance transmission business, in which Eaton faces less of a competitive threat than with its linehaul transmissions, Eaton's profit margins are considerably higher. While Eaton has not provided information to directly compute its operating profit margin for its linehaul and performance transmissions separately, if its operating margins in these markets are proportional to its gross margins (i.e., if operating expenses are borne in the same proportion to sales as cost of goods sold), this would imply that the operating margins are approximately 12% on average for linehaul transmissions and approximately 18% for performance transmissions. These margins further indicate that Eaton is able to exercise monopoly power in both the performance and linehaul transmission market, with the relatively higher margin Eaton earns on performance relative to linehaul transmissions being further evidence of the even greater market power it is able to exercise in the absence of any competition.

## **7. ZF Meritor posed a competitive threat to Eaton's monopoly in heavy-duty transmission markets**

- (112) Despite the existence of significant barriers to entry and Eaton's dominant position in the linehaul and performance transmission markets, in 1989 Meritor (then Rockwell) successfully entered the linehaul market with a direct-drive 9-speed manual transmission,<sup>77</sup> and gained increasing market share at Eaton's expense throughout the 1990s.<sup>78</sup> In 1999, Meritor formed a joint venture with ZF to combine the technological transmission expertise capabilities of ZF with Meritor's sales, distribution, and after-sales service network.<sup>79</sup> As part of the joint venture's plan to grow the scope and breadth of the company's transmission line, ZFM planned to launch North America's first two-pedal, fully automated mechanical transmission, the FreedomLine. The launch of this new transmission, a significant technological break-through well received by fleets, drivers, and the trade press,<sup>80</sup> substantially increased the competitive threat Meritor had previously posed to Eaton's HD Transmission business. The increasingly restrictive provisions of Eaton's LTAs in its "OEM partnership" period beginning in 2000 coincides with the increased threat posed by ZFM—

<sup>77</sup> See <http://www.prenewswire.co.uk/cgi/news/release?id=45007> (News release announcing ZF Meritor and providing short Rockwell transmission business history dated June 10, 1999).

<sup>78</sup> See <http://www.arvinmeritor.com/about/history.asp>. Meritor also manufactured a small number of 13-speed transmissions that were also intended for linehaul use.

<sup>79</sup> See <http://www.prenewswire.co.uk/cgi/news/release?id=45007> (News release announcing ZF Meritor dated June 10, 1999).

<sup>80</sup> *Land Line Magazine*, "ZF Meritor's FreedomLine two-pedal automated manual transmission," June 2001, available at [http://www.landlinemag.com/Archives/2001/Jun2001/Your\\_Equipment/FreedomLine.html](http://www.landlinemag.com/Archives/2001/Jun2001/Your_Equipment/FreedomLine.html) (release announcing receipt of Truck Writers of North America Technical Achievement Award for 2000).

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and the FreedomLine—to Eaton’s monopoly position in the HD Transmission markets, and the documents indicate Eaton used its LTAs as a direct response to this threat.<sup>81</sup>

### 7.1. Meritor’s competition with Eaton

- (113) Upon its market entry in 1989, Meritor became an immediate competitor of Eaton in the HD Transmission market for linehaul applications. In an internal presentation, Eaton characterizes the time period immediately following the entry of Meritor into the market, namely the time period between 1990 and 1995, as the “Early Competition Era.”<sup>82</sup> This view of Meritor as providing incipient competition in the linehaul market during this time period is confirmed by the fact that Eaton lost 6% of all HD Transmission sales in North America in the two years following the entry of Meritor and Dana.<sup>83</sup> The effect on Eaton of competition from Meritor transmissions was particularly apparent at Freightliner. Eaton’s share of transmission sales at Freightliner remained relatively constant immediately after Meritor’s entry into the market, but it subsequently fell from 85% in 1994 to 66% in 1998.<sup>84</sup> Conversely, Meritor experienced transmission share growth at Freightliner (and the other OEMs). By the mid-1990s, Meritor had a range of 9 and 10-speed manual transmissions that generally were comparable to Eaton’s 9 and 10-speed offerings.

### 7.2. ZF Meritor’s “FreedomLine” automated manual transmission

- (114) In 1997, ZF introduced into the European market the “ASTronic” transmission, a two-pedal fully automated transmission that met with considerable market acceptance.<sup>85</sup> This transmission has become the most successful automated manual transmission in the world, with ZF recently manufacturing its 250,000<sup>th</sup> unit.<sup>86</sup>
- (115) With the formation of ZF Meritor, ZF and Meritor planned to introduce a North American version of the ASTronic into NAFTA.<sup>87</sup> Field reports for this transmission, the FreedomLine, referenced the transmission’s “exceptional” performance, its “superior” technology and

<sup>81</sup> See, e.g., EATON-0001368182.

<sup>82</sup> See EATON-01122936.

<sup>83</sup> See EATON-00197135. Since the linehaul market accounts for approximately two thirds of the sales of heavy duty transmissions in North America, this translates into a loss of roughly 9% of the linehaul market for Eaton.

<sup>84</sup> See EATON-00687260–278, at 273.

<sup>85</sup> See [http://www.zf.com/corporate/en/press/press\\_releases/products\\_press/products\\_detail\\_696807.jsp](http://www.zf.com/corporate/en/press/press_releases/products_press/products_detail_696807.jsp).

<sup>86</sup> See [http://www.zf.com/corporate/en/press/press\\_releases/products\\_press/products\\_detail\\_696807.jsp](http://www.zf.com/corporate/en/press/press_releases/products_press/products_detail_696807.jsp).

<sup>87</sup> Before the joint venture with ZF, Meritor had introduced two new technologies, the Engine Synchronized Shift (“ESS”) and the shift-by-wire systems. Each of these technologies, at varying levels, reduced the need to use a clutch and made shifting easier.

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functionality,<sup>88</sup> and strong customer interest.<sup>89</sup> Many dealers and fleets requested the installation of the FreedomLine transmission on their trucks.<sup>90</sup> PACCAR was the first OEM scheduled to release the FreedomLine. According to an Eaton internal document, Peterbilt, one of PACCAR's brands, advertised that the FreedomLine was available on some of their trucks as early as February 2001.<sup>91</sup> Another Eaton document reports that the FreedomLine was scheduled to be introduced at Freightliner in 2001.<sup>92</sup> International was expected to release the FreedomLine in 2002.<sup>93</sup> Volvo had started meetings with Meritor regarding engineering efforts for introducing the FreedomLine in early to mid-2001.<sup>94</sup> However, as I discuss in more detail in Section 7, Eaton's anticompetitive conduct significantly delayed the release dates of the FreedomLine at the OEMs and limited ZFM's ability to sell the FreedomLine in significant quantities.

- (116) While ZFM's FreedomLine received excellent reviews, Eaton's automated transmission products faced many technical problems and schedule setbacks. Eaton's existing 3-pedal automated manual transmission, the AutoShift, experienced significant reliability problems. For example, PACCAR complained repeatedly about the high failure rate of the AutoShift. PACCAR also confirmed that the market perceived ZFM's two-pedal FreedomLine to be more technologically advanced than Eaton's three-pedal AutoShift.<sup>95</sup> Eaton's internal assessment of its AutoShift transmission acknowledged that its reliability problems were serious.<sup>96</sup>
- (117) When ZFM announced the launch of the FreedomLine in November 1999,<sup>97</sup> Eaton did not have a comparable transmission and did not begin to develop the "concept" for its two-pedal product until December 2000.<sup>98</sup> In early 2002, Eaton's Roadranger product planning manager noted, "we are 2 years behind our competition in offering a 2 pedal HD On-highway

<sup>88</sup> See EATON-00438079.

<sup>89</sup> See EATON-01405413.

<sup>90</sup> See EATON-00677088 for customer requests at PACCAR, EATON-00704549 for customer pressure at Volvo, EATON-00438079 for customer requests at International, and FTL0170-173 for customer pressure at Freightliner.

<sup>91</sup> See EATON-00677088.

<sup>92</sup> See EATON-00704553. In the same document it is also reported that Freightliner was expect ZF Meritor to introduce new performance models in 2002.

<sup>93</sup> See EATON-00438079.

<sup>94</sup> See EATON-00677088.

<sup>95</sup> See documents 000202, 000656 and 000667 in the PACCAR production.

<sup>96</sup> See EATON-00021484. In this document Eaton states that the "AutoShift is in the top 10 for warranty claim issue involvement."

<sup>97</sup> See *The Auto Channel*, "ZF Meritor LLC Launches FreedomLine," November 3, 1999, available at <http://www.theautochannel.com/news/press/date/19991102/press002395.html> (News release announcing FreedomLine launch).

<sup>98</sup> See, e.g., EATON-00266801-846, at 803 (Gate 1 proceeded in December 2000, while design phase was delayed and pushed out from August 2001 until November 2002).

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solution.”<sup>99</sup> Eighteen months later, Eaton released its two-pedal automated mechanical transmission in a limited quantity release (“LQR”).<sup>100</sup> A few months into the LQR, Eaton acknowledged that “we are late with 2-pedal” and that Eaton “is facing the most significant competitive threat in a long time with the Freedomline.”<sup>101</sup>

- (118) The fact that ZFM had a technologically superior and competitively priced two-pedal fully automated transmission product, while Eaton could not deliver a comparable reliable product in a timely manner, provides strong evidence that in a competitive market, Eaton would have lost significant market share to ZFM. Eaton was well aware of this risk. As early as 1999, Eaton listed “ZF’s entry with Meritor” as one of the main threats in its Global Sales and Marketing Strategic Plan.<sup>102</sup> Again in 2002, Eaton stated that ZF’s entry into the North American transmission markets with the FreedomLine was a major risk to Eaton.<sup>103</sup> As described in more detail below, instead of responding in a procompetitive manner, Eaton attempted to foreclose ZFM from the market by employing exclusionary long-term agreements with the OEMs, and Eaton then resorted to a number of anticompetitive actions in aggressively enforcing those LTAs. Eaton’s anticompetitive actions had the effect of weakening ZFM as a competitive threat to Eaton, delaying the full release of the FreedomLine to end customers, preventing the localization of the FreedomLine by obstructing ZFM’s efforts to achieve sufficient scale economies, and, as discussed further in Section 10, thereby harming competition and end customers.

## 8. Eaton’s exclusionary conduct

- (119) In order to fend off the competitive threat constituted by ZFM, in 2000 Eaton entered long-term agreements with three of the four OEMs (Freightliner, International, and PACCAR) that, while not expressly prohibiting the OEMs from dealing with Eaton’s competitors in the linehaul and performance transmission markets, had the practical effect of being exclusive dealing arrangements.<sup>104</sup> As I discuss in more detail below, these long-term agreements required the OEMs to commit to purchase from Eaton a very large share of their transmissions needs, typically in excess of 90%.

<sup>99</sup> EATON-00909187–188, at 187.

<sup>100</sup> See, e.g., [http://findarticles.com/p/articles/mi\\_m0FZX/is\\_6\\_69/ai\\_104684664](http://findarticles.com/p/articles/mi_m0FZX/is_6_69/ai_104684664) (Reporting in June 2003 on Eaton’s UltraShift LQR).

<sup>101</sup> EATON-00710871–874, at 871.

<sup>102</sup> See EATON-00688931.

<sup>103</sup> See EATON-00086409.

<sup>104</sup> The fourth OEM, Volvo/Mack, already had a contractual agreement in place with Eaton.



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- (120) Share-based rebate programs with high share requirements can be used by a monopolist to achieve *de facto* exclusive dealing. This is more likely to be the case when a dominant firm has a very high degree of monopoly power in a given product market—as is the case with Eaton in both the linehaul and performance transmission markets at issue—and can use this power to exclude actual and potential competitors from that product market and/or other markets.
- (121) Furthermore, as I discuss in paragraphs (42)–(45), exclusion from an OEM’s data book and/or the imposition of a significant retail price surcharge will put a transmission manufacturer at a serious competitive disadvantage; excluding a competing transmission manufacturer from OEM data books—as Eaton was able to achieve—will foreclose the transmission manufacturer from the market. Furthermore, as I discuss in Section 10 below, the type of retail price surcharges that Eaton and the OEMs agreed to impose on ZFM’s transmissions had the effect of weakening price competition in the markets for HD Transmissions, as it severely limits the ability of competing transmission manufacturers to use prices to influence truck purchasers’ decisions regarding which transmissions will be installed on their trucks.
- (122) Even after they agreed with Eaton to do so, the OEMs found it more difficult to convert a large number of fleets from ZFM to Eaton transmissions than they or Eaton had expected. As a consequence, Eaton’s share increased only slowly in 2001 and 2002. This was due to several factors, including: a.) the strong preference of some final customers for ZFM transmissions; b.) ZFM’s efforts to increase its sales to OEMs via “pull-through” marketing activities and its use of financial incentives (i.e., field incentives, competitive equalization payments, CE, and SPIFFs) paid directly to fleets and other end customers; c.) technical and performance problems with Eaton’s AutoShift automated manual transmissions; and d.) Eaton’s inability to timely deliver transmissions due to capacity constraints.
- (123) Eaton punished or threatened to punish the OEMs for their sales of ZFM transmissions by reducing or withholding the OEMs’ share-based rebates, and Eaton induced the OEMs into taking a broad range of anticompetitive actions in 2002 and 2003 in order to convert more of their end customers from purchasing trucks equipped with ZFM transmissions to trucks equipped with Eaton transmissions, despite the fact that these customers clearly preferred ZFM to Eaton transmissions in their trucks at the prevailing price levels.<sup>105</sup> The anticompetitive actions that Eaton coerced the OEMs into taking include, among others: refusing to provide fleet customers with quotes for trucks equipped with ZFM transmissions; providing end-customers with discriminatory and punitive leasing, financing, and warranty

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<sup>105</sup> See, e.g., Eaton 0007049.

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terms if they chose to purchase trucks with ZFM transmissions; delaying the OEM's engineering activities related to the FreedomLine and thereby delaying the availability of the FreedomLine to end customers; and imposing significant retail price surcharges on purchasers who specified their trucks with ZFM transmissions.

- (124) As a consequence of the actions undertaken by Eaton and the OEMs, as required and monitored by Eaton to ensure compliance with the LTAs, Eaton's share increased significantly at all OEMs between the end of 2002 and 2003, reaching above 90% at all OEMs by the end of 2003. As I explain further in paragraph (175), this made it impossible for ZFM to achieve the scale of production necessary to remain a viable competitor: in December 2003, ZFM exited the market and abandoned plans to "industrialize" production of the FreedomLine in the United States, and on December 31, 2006, Meritor exited the HD Transmission business altogether.

### 8.1. Eaton's foreclosure of ZFM at Freightliner

- (125) In the 1990s, Meritor served as one of Freightliner's primary HD Transmission suppliers. A three-year supply agreement, effective October 1, 1998, memorialized Meritor's position as Freightliner's standard transmission (and clutch) supplier on certain Sterling and Freightliner model trucks.<sup>106</sup> The agreement included transmission price reductions, but did not provide for share-based rebates, did not specify how Freightliner would price Meritor's transmissions or the transmissions of competing suppliers, did not address competing transmission suppliers' promotional or other marketing programs, did not provide Meritor exclusive warranty or data book positioning on transmissions, and did not set forth how other suppliers' transmissions were to be positioned (*e.g.*, published *v.* unpublished) in the Freightliner data books.
- (126) On February 4, 1999, Freightliner entered into a supply agreement with Eaton that was to run through December 31, 2001. This agreement provided Eaton standard position on its performance transmissions and required Freightliner to "retail price [Eaton's] transmission models at parity to competitor transmission models of the same torque and similar design."<sup>107</sup> The agreement also stated that "Freightliner agrees to eliminate the Century Class published 'drivetrain credit' effective August 19, 1998."<sup>108</sup> This credit was worth \$300 and provided by Meritor to purchasers of Freightliner trucks who specified a Meritor transmission and certain other of Meritor's drivetrain components.<sup>109</sup> Freightliner's elimination of this drivetrain

<sup>106</sup> ZFMA0006653-702.

<sup>107</sup> EATON-00108575-598, at 577.

<sup>108</sup> *Id.* at 588. See also Deposition of Greg Sharp 178:11-179:22.

<sup>109</sup> Deposition of Greg Sharp 178:25-179:17.



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credit, provided by Meritor and a benefit to the ultimate consumer, was a “key point” of the contract and resulted in an increase in the effective price of the Meritor transmission paid by the end customer.<sup>110</sup> This 1999 agreement also provided Freightliner rebates on the purchases of certain of its transmissions, including Eaton’s Multi-Speed, AutoShift, and Top 2 transmissions.<sup>111</sup> Eaton did not condition these rebates on share penetration.

- (127) In 2000, Eaton and Freightliner explored expanding their contractual relationship, to include providing Eaton “standard and only published heavy duty” position.<sup>112</sup> Eaton sought an expanded relationship to “Kill Meritor/ZF transmission business.”<sup>113</sup> Although Freightliner was suffering significant quality issues with Eaton’s three-pedal automated mechanical transmission at that time,<sup>114</sup> and the “consequences” of an Eaton LTA “would kill any development and marketing of the Freedomline (ZF Meritor’s more advanced automated mechanical),” as well as “breaks Meritor agreement on transmission and clutch,” and portended that “Eaton could become the next Allison” (*i.e.*, a monopolist, as Allison was with its automatic transmissions in the market for HD Transmissions used in specialty applications), Eaton and Freightliner entered into a five-year LTA effective November 1, 2000.<sup>115</sup>
- (128) The LTA required Freightliner to publish Eaton transmissions as standard on additional truck series (replacing Meritor as the standard) and to “preferential price the suppliers [Eaton’s] transmissions and clutches against equivalent competitor products through 2001.”<sup>116</sup> Specifically, the parties agreed that “Meritor products [would] be priced at \$200.00 premium over like-torque capacity Fuller products.”<sup>117</sup> Eaton monitored Freightliner’s compliance with this pricing agreement and sought to enforce it when Eaton believed Freightliner was acting in a manner inconsistent with the parties’ agreement.<sup>118</sup>

<sup>110</sup> EATON-01222938–939.

<sup>111</sup> EATON-00108575–598, at 589.

<sup>112</sup> FTL0426.

<sup>113</sup> ZFMA0371650–664, at 653. See also ZFMA0028117–119, at 117 (In a meeting with Meritor, Freightliner “acknowledged Eaton wants to ‘knock you (ARM) in the head’ on 9 & 10 speeds”).

<sup>114</sup> FTL0422–423 (Freightliner considered removing AutoShift from data books because unreliable and “unsupportable”). See also EATON-00063492 (Freightliner scored Eaton a “big fat zero” when assessing Eaton’s responsiveness to Freightliner purchasing’s requests for assistance); EATON-00043214–216 (Freightliner manufacturing expressing dissatisfaction if it had to increase Eaton’s penetration at Freightliner); EATON-00099012–013 (recounting Freightliner “Product Improvement Committee” meeting in August 2000 and discussion of AutoShift as a “top 10 warranty claim issue”).

<sup>115</sup> FTL0426; FTL0222–241 (certain exhibits to agreement not produced).

<sup>116</sup> FTL0222–241, at 241.

<sup>117</sup> EATON-00930506–507, at 506. See also EATON-01198805–806, at 805 (“As a result of the agreement ... Meritor 10-speeds will be priced at a \$200 list price premium over comparable Eaton 10-speeds”); EATON-00025643 (“We understand [Meritor] Torq2 data book pricing should be at a \$200 premium to the ‘like-torque’ FR-10 Speed”).

<sup>118</sup> See, e.g., EATON-00930506 (Eaton informs Freightliner that “Upon further investigation Eaton has come to the

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- (129) Further with regard to data book positioning, the agreement also set forth that, “Freightliner agrees to exclusively publish supplier’s [Eaton’s] transmissions and clutch effective with the first printing of Freightliner’s data books in 2002.”<sup>119</sup>
- (130) The LTA also introduced an Eaton HD Transmission (and clutch) share target. “Freightliner will commit to reaching Supplier’s [Eaton’s] heavy duty truck transmission and clutch penetration sales goal of 92% or better by January 1, 2002.”<sup>120</sup> This 92% share commitment acted as the linchpin to the LTA.<sup>121</sup> If Freightliner failed to increase its purchases of Eaton’s HD Transmissions from roughly 75% to 92% across all of its HD Transmission needs,<sup>122</sup> Eaton could terminate the agreement, eliminate price reductions, and/or withhold rebates offered under the contract.<sup>123</sup> This would equate to Freightliner losing “millions of dollars in rebate enhancements,”<sup>124</sup> which Freightliner could not afford to incur during an extremely difficult financial time for the company.<sup>125</sup>
- (131) Eaton viewed the LTA with Freightliner as a “landmark agreement”<sup>126</sup> that created a “partnership with the Freightliner/Sterling/Western Star Organization.”<sup>127</sup> Eaton believed the “Freightliner agreement will increase market share at Freightliner from 74% to 92% by 2002.”<sup>128</sup>
- (132) To increase its Freightliner share in 2001, Eaton relied on deployment of the preferential pricing provision of the LTA and fleet “visibility [to] new FR pricing,”<sup>129</sup> tools to prevent or delay Freightliner release of the ZFM FreedomLine,<sup>130</sup> access to Freightliner’s order board

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realization that all of the Meritor Torq2 products have not been priced according to our \$200 premium agreement. Eaton would respectfully ask that his situation be addressed for all future truck quotes by a dealer letter being sent to clarify the price discrepancy.”). See also EATON-00920894 (rebate withheld in part because “Eaton has been priced at a premium to Meritor on transmissions.”).

<sup>119</sup> FTL0222–241, at 241.

<sup>120</sup> FTL0222–241, at 224.

<sup>121</sup> The purpose of the LTA was to “increase the rebate dollars provided direct to Freightliner LLC while increasing Eaton penetration at Freightliner LLC”).

<sup>122</sup> At the beginning of 2000, Eaton’s share at Freightliner was around 75%. See EATON-00382154; EATON-00215923–931, at 925.

<sup>123</sup> FTL0222–241, at 224; EATON-00023445–447.

<sup>124</sup> FTL0254.

<sup>125</sup> In 2000, Freightliner suffered through negative earnings due to, among other things, a poorly executed truck residual/buy-back program that forced Freightliner to purchase thousands of used trucks at a substantial loss.

<sup>126</sup> EATON-00021007–009, at 008.

<sup>127</sup> EATON-00704785–787. See also FTL0147–169, at 149 (“New 5-year partnership was born November 2000”).

<sup>128</sup> EATON-00382154. See also EATON-0074553–562, at 560, 562 (“Winning ‘impact’” of Freightliner deal includes “share target of 92% within 24 mos. 18% share gain transmission 42% share gain for clutch”).

<sup>129</sup> EATON-01198805–806; EATON-00023437–439; EATON-01441419–434, at 424. See also ZFMA0002359–361, at 361 (Freightliner relates to Meritor that Eaton believes the use of data book positioning and rebates will “make it difficult for ZF/MRA [Meritor] to pull product through.”).

<sup>130</sup> Eaton’s goal from the outset was to slow Freightliner’s release and promotion of the FreedomLine. See, e.g., EATON-

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for purposes of identifying and pursuing Meritor transmission users for conversion,<sup>131</sup> and threats to Freightliner that rebates and price reductions provided under the LTA would be lost if share did not reach 92% by January 1, 2002.<sup>132</sup> By August 2001, however, Eaton's share at Freightliner remained under 80%.<sup>133</sup>

- (133) To remedy share shortfalls, Eaton increased pressure on Freightliner to assist Eaton in reaching 92% penetration. At meetings and through other communications in August, September, and October 2001, Eaton informed Freightliner of the "challenges Freightliner LLC faces with respect to Fuller share targets,"<sup>134</sup> called for an "action plan" to jointly create and implement a conversion strategy,<sup>135</sup> and asked Freightliner to contact fleets "equipped with competitive heavy-duty transmissions" in an effort to convert them to Eaton product.<sup>136</sup> Concurrent with these communications, Eaton reiterated to Freightliner what would transpire if share goals were not met.<sup>137</sup> As a result, Freightliner sales personnel recognized that "we are under the gun to get our share of Eaton transmissions up, very quickly."<sup>138</sup> Subsequently:

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00020739 (May 2000 internal Eaton communication suggests providing certain benefits to Freightliner in exchange for "FreedomLine to remain unpublished option for 3 years"). This goal continued into 2003. EATON-01441492-497, at 495 (February 2003 internal Eaton communication suggests providing certain benefits to Freightliner in exchange for "continued non-publication of FreedomLine"). To further dissuade Freightliner from investing in the FreedomLine, Eaton represented to Freightliner that it would be able to launch a 2-pedal product by the third quarter of 2001. EATON-00021851-853; EATON-01441419-434, at 425. The product did not reach LQR until 2003, however. See, e.g., EATON-00077258. The LTA also assisted Eaton's strategy to delay Freightliner's engineering of the FreedomLine. See ARMFTL002738 (inclusion of the FreedomLine in share penetration calculation viewed as a penalty). It is logical to conclude that this potential penalty chilled Freightliner's interest in promoting and releasing the FreedomLine. See, e.g., FTL0170-173, ZFMA0233523, ZFMA0158650-651, and EATON-00922307 (despite stating in the fall of 2000 that the FreedomLine would be available by the middle of 2001, receiving nearly 5,000 customer requests for quotes on the FreedomLine by September 2001, and being "fearful" in late 2001 of losing sales if the product wasn't published, Freightliner delayed publication of the product into 2003). The influence of the LTA on Freightliner's treatment of the FreedomLine continued into 2004 and beyond. ARMFTL006792-93 (In assessing whether to publish the FreedomLine after unpublishing it in 2004, Freightliner states from a "customer perspective, publishing this product is probably the right thing to do and should have never been taken out of the book. It is a good product with considerable demand in the marketplace. Orders from Freightliner Trucks would certainly increase. However, for all the reasons you outline, it would not be the prudent thing to do. It would impact our Eaton deal ....").

<sup>131</sup> EATON-00026430 (information received from Freightliner); EATON-00027127-133, at 128 (use of order board "information is unlimited—proving to be a source for 'Fleet-changeover' information used by ERFM").

<sup>132</sup> See, e.g., EATON-00023444-447; EATON-00930499-500; FTL0147-169, at 158.

<sup>133</sup> EATON-00023369-370. See also ZFMA0211344-347, at 345 (Consistent with Eaton's inability to gain significant share in this period, ZFM's Freightliner account team was "working diligently with our field group to maintain ZFM transmission customers and DT plus customers." ZFM hoped that if it could stop conversions, "[t]his might force Eaton to raise their prices, which will open the door to ZFM to become re-published in Data Books.").

<sup>134</sup> EATON-00382182.

<sup>135</sup> EATON-FTL0147-169, at 158.

<sup>136</sup> EATON-00023445-447.

<sup>137</sup> See, e.g., EATON-00922307 ("Freightliner was informed that Fuller share must be 92% by the end of the 1<sup>st</sup> qtr 02 for enhanced rebates to continue.").

<sup>138</sup> ETNFTL013086-087.

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a meeting was held in mid-November with Mark Lampert [Freightliner's Senior Vice President of Sales and Marketing<sup>139</sup>] and all Freightliner RGMs to discuss the situation, and plan immediate course-corrections. The Freightliner RGMs were very supportive, seemed to understand the gravity of the situation, and are willing to work with Eaton Region Managers to sway the competitive product orders to Eaton orders.<sup>140</sup>

- (134) After the meeting, Freightliner demonstrated a new level of commitment to achieving the 92% share target, and Eaton closely monitored Freightliner's activity to ensure contractual compliance in 2002.<sup>141</sup> In January 2002, Eaton told Freightliner that the "achievement of the mutually agreed upon share goals is Eaton's number one priority," and that the "enhanced rebate and FR price reduction will be reviewed quarterly based on achieving the 92% share target .... In the future, the enhanced rebates cannot be awarded unless these share targets are achieved."<sup>142</sup> Eaton also continued in 2002 to police and enforce Freightliner's obligation to preferentially price Eaton products.<sup>143</sup>
- (135) For its part, Freightliner sales told Eaton that "we are working hard towards trying to improve our share of your transmission products in our backlog," and along those lines informed Eaton that Freightliner would "try to direct your attention toward any trends I see that are not in-line with this objective."<sup>144</sup> Freightliner sales also shared this sentiment internally with Freightliner purchasing, "We have been increasing our push to require Fuller transmissions on deals where Meritor is spec'd, and has been the transmission of choice for the customer in the past."<sup>145</sup> However, it was clear to Freightliner that many customers would not willingly change from Meritor to Eaton transmissions because, as told to Freightliner in "three different areas of the country," "the support that customers receive from Meritor is outstanding ... [and customers] "most likely [would] not change to Fuller, even if we make it worth their while with a couple of hundred bucks."<sup>146</sup>

<sup>139</sup> Deposition of Mark Lampert 5:10–6:15.

<sup>140</sup> EATON-00023691–694, at 693. See also EATON-00023658–666.

<sup>141</sup> See, e.g., EATON-00029481–490, at 486 ("Eaton has been aggressively monitoring Freightliner's share performance, and very vocal with our criticisms regarding the slow growth").

<sup>142</sup> FTL-FB0001.

<sup>143</sup> See, e.g., EATON-00930506–507; EATON-0002489; EATON-00025679–681

<sup>144</sup> EATON-00082441–442.

<sup>145</sup> ARMFTL002727.

<sup>146</sup> ARMFTL002727.

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- (136) To overcome customer reluctance to switch and achieve the Eaton share targets, Freightliner—working with Eaton or induced by the requirements of the LTA—implemented a broad range of “aggressive,” “creative,” and “innovative”<sup>147</sup> strategies:
1. Refusing to quote truck residual values: Freightliner would “force” customers to change to Eaton “when they [the customers] want residual guarantee commitments.”<sup>148</sup> Mr. Lampert shared this strategy with Eaton. As recounted by Eaton’s Matt Sturdy, Mr. Lampert expressed: “Freightliner will know [sic] longer quote residual values on trucks equipped with Meritor clutches and transmissions. For a vehicle to receive a residual it must be equipped with an Eaton clutch and Fuller Transmission.”<sup>149</sup>
  2. Data book removal: Pursuant to the terms of the contract, Freightliner removed ZFM manual transmissions from the Freightliner data books.<sup>150</sup>
  3. Alleged lack of availability: Freightliner informed customers that ZFM transmissions were not available (and existing orders for ZFM transmissions would be switched to Eaton transmissions).<sup>151</sup>
  4. Pricing penalties and rewards: Freightliner provided some customers who agreed to specify Eaton transmissions with price concessions on the cost of Freightliner trucks purchased by the customer,<sup>152</sup> while imposing arbitrary price penalties on customers who selected ZFM transmissions.<sup>153</sup>
  5. Allocation of build slots: On October 1, 2002, the heavy-duty truck industry experienced an emissions change that required modifications to truck engines. These modifications materially increased the price of heavy-duty trucks. In an attempt to avoid the added cost, many fleets sought to purchase trucks ahead of the October deadline. Taking advantage of this situation, Freightliner announced to its dealers that any purchaser seeking 15

<sup>147</sup> EATON-00634903; EATON-00027110–113, at 113.

<sup>148</sup> ARMFTL002727.

<sup>149</sup> EATON-00634903. See, e.g., ZFMA0199602–604 (collaborative Eaton/Freightliner use of residual values at Ryder to convert share).

<sup>150</sup> See, e.g., EATON-00666060–061.

<sup>151</sup> EATON-00029321 (Eaton’s Fouch writes, “Late yesterday I learned that Mark Lampert had approached ‘several’ fleets to inform them that Meritor transmissions would not be available through Freightliner.”); EATON-00086391–398, at 395 (“Mark Lampert refusing to quote Meritor to some customers”). See also ZFMA0001984.

<sup>152</sup> See, e.g., EATON-00082450–451 (Freightliner field representative learning of any incentive offered by Meritor “will effectively double it in way of truck concession to include our [Eaton] products.”). See also ZFMA0200093 (Meritor learns Freightliner is offering “concession levels .5 percentage or better on vehicles equipped with the Fuller product”).

<sup>153</sup> See, e.g., EATON-00082450–451 (Freightliner field representative “will heavily penalize the customer for forcing a spec including Meritor clutches and transmission.... The penalty he imposes is in the neighborhood of \$750.00.”).

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trucks or more and a build prior to the emissions deadline, must use an Eaton transmission, even if an order had already been made with Meritor transmissions.<sup>154</sup>

6. Prohibitions on promotions: Freightliner declined or rescinded agreements with Meritor to promote ZFM transmissions.<sup>155</sup>
7. Preferential financing terms: Freightliner provided special financing through Mercedes Benz Credit Corp “to reduce the interest rate and truck payments of fleet specifying Eaton clutches and Fuller transmissions,”<sup>156</sup> and did not provide such special financing to fleets specifying ZFM transmissions.
8. Selling practices inconsistent with OEM standard practices: In a departure from its standard business practices, Freightliner circumvented traditional contacts at fleet customers who were reluctant to change to Eaton transmissions, and attempted to persuade company executives at those fleets to specify Eaton components.<sup>157</sup>
9. Coordination of efforts with Eaton: Through partner meetings and other communications, Freightliner sales and purchasing and Eaton sales and OEM account management continued to coordinate in identifying fleets to be converted from Meritor to Eaton transmissions.<sup>158</sup> This “teamwork with RFM and the Freightliner team is paying off as we get closer and closer to our share goal!”<sup>159</sup>

- (137) To ensure that Freightliner persisted in its undertakings to assist Eaton in achieving 92% penetration, Eaton declined to pay any share-based rebate to Freightliner for performance in the first quarter of 2002. In that period, Eaton’s transmission share at Freightliner failed to

<sup>154</sup> See, e.g., ZFMA0001979 (Meritor reporting on meetings with dealers in which dealers relayed Freightliner mandate pertaining to pre-October builds).

<sup>155</sup> See, e.g., ZFMA0339998–40002, at 3999; ZFMA0149986 (Freightliner withdraws support for dealer stock program offering incentives on FreedomLine and support for “Fuel performance package,” despite Mark Lampert’s original support for the package and request that package be expanded.). See also ARMFTL001476 (Freightliner voicing resistance to providing downstream credits on Meritor transmissions because “I am of the impression that the LLC strategy is to promote Fuller transmission sales.”).

<sup>156</sup> EATON-00027110–113, at 113. See also ZFMA0211401 (Meritor learns that customer told that if it specified ZFM transmissions it would not receive financing from Freightliner).

<sup>157</sup> See, e.g., ZFMA0211293 (Mark Lampert, “going around” Old Dominion’s fleet manger, Ed Richardson, and meeting with the president of the company. This resulted in Freightliner successfully “switching the order” from Meritor to Eaton transmissions.); EATON-00067162 (“Ed is not at all frustrated ... with us in general, but he is still upset that he was ‘force fed’ a spec other than what he wanted and preferred.”).

<sup>158</sup> See, e.g., EATON-00063869 (Freightliner purchasing providing information on competitive pricing); EATON-00029243 (Eaton OEM account team to Freightliner purchasing requesting for assistance in converting clutches and transmissions from Meritor to Eaton); EATON-00029481–490, at 486 (Freightliner provided Eaton “‘open book’ build rate information and details regarding complete Y2002 Fuller (as well as competitive) product builds”); EATON-01222915–916 (“enhanced communications at the field level, resulting in the conversion of several large fleets”). The partner’s coordination continued into 2003. EATON-00033069.

<sup>159</sup> EATON-00009915.



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reach the 92% penetration requirement.<sup>160</sup> However, Eaton noted that “we have made progress towards reaching the 92% share target through new databook position and a targeted conversion approach to several key fleets.... Eaton wishes to continue this positive progress with Freightliner, maintain the momentum, and achieve the share target together.”<sup>161</sup>

- (138) By the summer of 2002, Freightliner’s and Eaton’s strategies to grow Eaton share had effectively, in Freightliner’s view, “killed Meritor’s transmission business. It is just a matter of time now before they close the doors.”<sup>162</sup> To avoid this scenario, Meritor asked Freightliner to seek relief from the Eaton LTA.<sup>163</sup> In executive meetings, Freightliner informed Meritor that Eaton would not permit the requested relief.<sup>164</sup>
- (139) Faced with the possibility of having only one HD transmissions supplier for linehaul and performance transmissions, Freightliner realized that this result “would leave Eaton as a monopoly and would make future cost increases past 2005 likely.”<sup>165</sup> In a meeting with Eaton in August 2002, Freightliner voiced concern about this “dictatorial” possibility to Eaton.<sup>166</sup> Accordingly, Freightliner sought a contract extension to protect itself if it was to deal with a single source supplier.<sup>167</sup> Consequently, Freightliner and Eaton began negotiating an extension, which Eaton believed “would solidify Truck’s position past the next change in engine emissions and provide a solid stable base for 7 years of Power of One Team building opportunities.”<sup>168</sup>
- (140) As part of the negotiations, the parties agreed to a seven-year contract extension that would take the LTA through 2010, and reconciled a dispute based on Freightliner’s position that the FreedomLine should be excluded from the Eaton HD Transmission share penetration calculation until Eaton released a comparable product.<sup>169</sup> To resolve the matter, Eaton offered a “sliding scale rebate” that Freightliner accepted “in exchange for calculating the Freedom

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<sup>160</sup> FTL-FB0028.

<sup>161</sup> FTL-FB0028.

<sup>162</sup> ARMFTL002713. See also EATON-00063904 (Freightliner tells Eaton in July 2002 that over 90% of new orders will be Eaton transmissions).

<sup>163</sup> See, e.g., ZFMA0211415–416 (offering concessions, including price reductions on various components with the understanding that Freightliner would “contact our competitor and seek similar relief from their similar contractual requirements”).

<sup>164</sup> Deposition of Thomas Gosnell 24:12–26:22. See also ZFMA0028132–33 (Gosnell notes of meeting with Schmueckle state Freightliner “does not have way to get out of Eaton contract”).

<sup>165</sup> ARMFTL000558-560, at 559.

<sup>166</sup> EATON-00437877–878, at 877 (“Freightliner is concerned that we will become a dictatorial supplier like Allison”).

<sup>167</sup> EATON-00437877–878, at 877.

<sup>168</sup> EATON-00219851.

<sup>169</sup> FTL0177-0190, at 0177 (Third Amendment to Supply Agreement). See also EATON-00033306–307, at 306. The question of inclusion of the FreedomLine initially was raised with Eaton in 2001. ARMFTL002738.

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transmission into the Meritor equation.”<sup>170</sup> According to the scaled rebate, the FreedomLine still remained subject to the LTA. Further, Eaton sought assurances from Freightliner that the FreedomLine would be removed from Freightliner’s data books once Eaton’s UltraShift was introduced.<sup>171</sup> In December 2003 Eaton and Freightliner met and the parties discussed Eaton’s desire to have the “FreedomLine out of the data book altogether,” and the “strong possibility” that such removal could happen for the “next data book.”<sup>172</sup> A few days later, Freightliner told Eaton, “as you have requested we will remove the FreedomLine transmission from all data books effective with the next release, which is scheduled today for January 27<sup>th</sup>.”<sup>173</sup> Eaton viewed this as “*great news*.” (emphasis added)

- (141) Figure 11 shows the evolution over time of Eaton’s share of Freightliner’s HD Transmission volume (excluding Allison, as per the LTA). As can be seen, Eaton’s share at Freightliner increased rapidly and significantly in the second half of 2002 and into 2003. As I have identified no other, independent event that accounts for these changes in Eaton’s share position, I attribute this gain in Eaton’s share to Eaton’s contractual relationship with Freightliner. This conclusion is corroborated by Eaton:

“2002–2003 share increased due to the *threat of rebate reduction*. This was a *shock* to Freightliner when we did not pay when share was not met. By holding them to our agreement and demonstrating they will be paid only if they meet the goals this has been a *big hammer* for addressing other issues.”<sup>174</sup> (emphasis added)

<sup>170</sup> FTL-FB0031. FTL0177-0190, at 0183 (the sliding scale reduced the penetration requirement by 1.5% to achieve a 100% rebate. No rebate was available for share below 86.5%. After April 1, 2004 or the full release of the Eaton two-pedal automated mechanical transmission, whichever happened first, the 92% share requirement would have to be met before receiving 100% of the rebate, while at 96% penetration, 102% of the rebate was available and below 85%, no rebate was available).

<sup>171</sup> EATON-01441501–503, at 503; FTL0131.

<sup>172</sup> EATON-00054793.

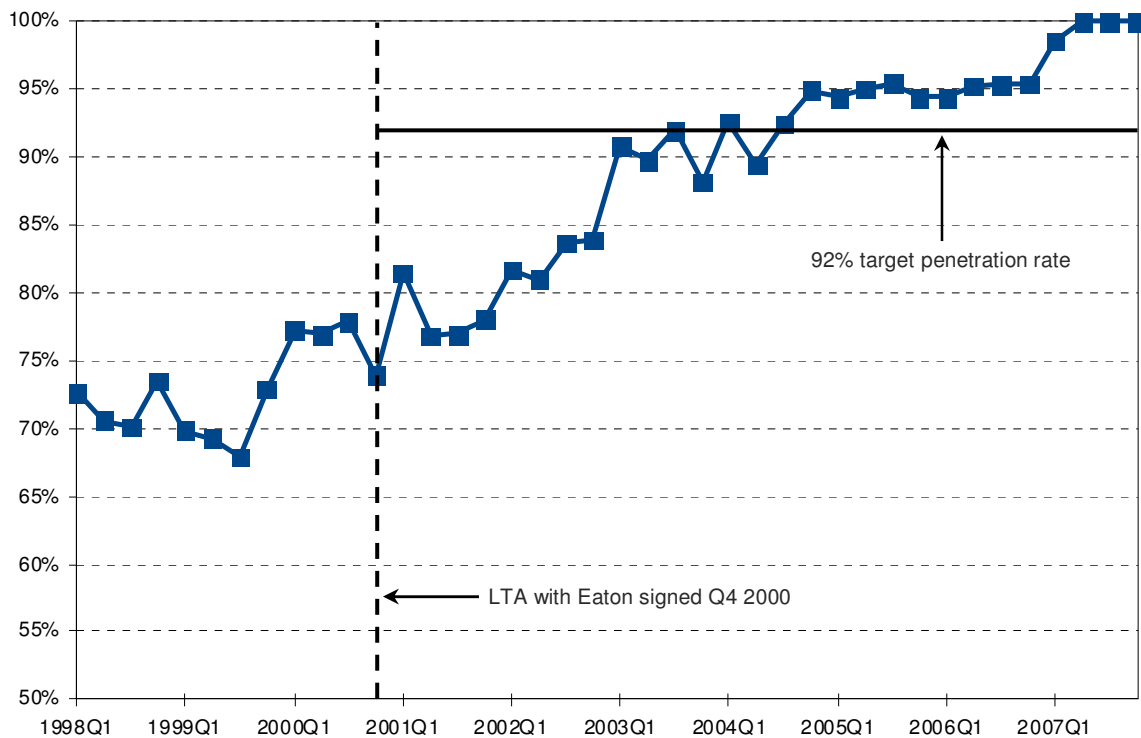
<sup>173</sup> EATON-00000422–423 (capitalization in the original). See also EATON-00013738–739 (confirming removal of the FreedomLine “as of the January 2004 data books”).

<sup>174</sup> EATON-00766698–712, at 702 (bold and capitalization in the original). See also Deposition of William Fouch 228:23–229:19.



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**Figure 11: Eaton's penetration at Freightliner**



- (142) In 2004, Eaton's HD Transmission penetration at Freightliner surpassed 92% and by 2007, Eaton's penetration reached 100%.<sup>175</sup>

## 8.2. Eaton's foreclosure of ZFM at International

- (143) In 1996, Eaton's share of HD transmissions at International was 59%.<sup>176</sup> In that year, Eaton and International entered into a five-year LTA for HD transmissions that provided Eaton standard position on International's 5000 and 9000 series trucks.<sup>177</sup> The agreement also appeared to contain share-based rebates.<sup>178</sup> By 2000, Eaton's share at International had increased to 79%.<sup>179</sup> In that year, Eaton and International agreed to carry their relationship to

<sup>175</sup> Deposition of Greg Sharp 236:7-239:15 & exhibit 37.

<sup>176</sup> ITE-000108-136, at 121.

<sup>177</sup> ITE-000108-136, at 121.

<sup>178</sup> EATON-00384872.

<sup>179</sup> ITE-000108-136 at 121.

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a “new level of commitment with the formation of a partnership.”<sup>180</sup> Among other items, Eaton’s “view of a higher level relationship i.e., partnership” included “95% share.”<sup>181</sup>

- (144) During the negotiation of the partnership arrangement, International made various “Commitments for 2000 Growth,” including recommending Eaton “transmissions on all [HD] applications from day one.”<sup>182</sup> Consistent with the International commitments, Eaton reported in July 2000 that “Navistar will be taking action to drive incremental unit growth on HD and MD products. They have reviewed with the vehicle centers and actions are taking place.”<sup>183</sup>
- (145) In February 2001, Eaton and International executed a five-year “comprehensive supply agreement,” with an effective date of July 1, 2000.<sup>184</sup> The agreement required International to publish Eaton manual transmissions as “standard” and “recommended” for the 2000, 3000, 4000, 5000, 8000, and 9000 series trucks.<sup>185</sup> International agreed to purchase Eaton transmissions unless Eaton did not offer a requested type of transmission or if a “customer expressly insists on a competitive product offering.”<sup>186</sup> The agreement also provided that for current truck models, Eaton transmissions would be the “recommended” offering in the “Diamond Spec Solution” and the exclusive Diamond Spec offering on next generation vehicles.<sup>187</sup>
- (146) The comprehensive supply agreement also employed conditional “growth” rebates. International would receive the rebates only if Eaton’s heavy duty transmission penetration at International exceeded 80% beginning in 2000, and no less than 87.5% after December 31, 2001.<sup>188</sup>
- (147) To grow Eaton’s share at International, the parties began holding “partnership” meetings in early 2001.<sup>189</sup> As part of the growth initiative, International informed Eaton of truck deals in which the customer specified a Meritor transmission.<sup>190</sup> The purpose was to assist Eaton in

<sup>180</sup> ITE-000106-108, at 106. See also ITE-000108-136, at 122.

<sup>181</sup> EATON-00380638.

<sup>182</sup> ITE-000108-136, at 129.

<sup>183</sup> EATON-00677893.

<sup>184</sup> ITE-000312; EATON-00108533–557.

<sup>185</sup> EATON-00108533–557, at 535.

<sup>186</sup> Id. at 538. The agreement, though not prohibiting International from buying other suppliers’ transmissions, states that International is to purchase from Eaton 100% of the transmissions used on an extensive number of International truck models. Id. at 535, 537.

<sup>187</sup> The Diamond Spec is a valuable “sales tool” (EATON-00108536–557, at 536), which by 2003, according to Eaton, “accounts for at least 70% of current vehicle order types.” EATON-00107782–89, at 82–83.

<sup>188</sup> ITE-000339.

<sup>189</sup> See, e.g., EATON-00380713–19.

<sup>190</sup> See, e.g., EATON-00653714–15.

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converting these orders to Eaton's products. Over time, International personnel expanded the level of detail they provided to Eaton on these deals. Eaton realized the sensitive nature of these enhanced disclosures and warned Eaton personnel to be careful with the information because if disseminated, "we risk losing our sources, as well as our relationships."<sup>191</sup>

- (148) By the end of 2001, the attempts by the "partnership" between International and Eaton to increase Eaton's share at International was experiencing difficulties. First, there was customer interest in ZFM's FreedomLine. By at least 2000, International customers began to express a desire to use the FreedomLine,<sup>192</sup> and in 2001, Sysco told International it would not order International trucks unless they were equipped with the FreedomLine.<sup>193</sup> Eaton was concerned because the "ZF/Meritor two pedal has the attention of the heavy duty and severe service vehicle centers."<sup>194</sup> Consequently, Eaton considered ways to slow introduction of the FreedomLine at International.<sup>195</sup> The parties' contract also provided Eaton some protection from the FreedomLine. As International told Meritor, although it could advertise the FreedomLine, the Eaton arrangement prevented International from giving "any preferential treatment for this transmission."<sup>196</sup>
- (149) A second difficulty experienced by the Eaton/International "partnership" was that ZFM was achieving and maintaining penetration at International by engaging in "pull-through" marketing activities.<sup>197</sup> In meetings in October and November 2001,<sup>198</sup> Eaton discussed with International a series of actions aimed at preventing ZFM's product pull-through. These actions included removing ZFM from the data book, imposing a price penalty on ZFM's products, and working more closely with International's product planning and sales engineering groups to eliminate ZFM from International's truck models.<sup>199</sup>
- (150) Figure 12 shows Eaton's share of the volume of the manual and automated manual heavy duty transmissions purchased by International between 1999 and 2007. This figure shows a similar impact of the Eaton LTA on Eaton's share at International as was evident in the figure for Freightliner, discussed above. With regard to Eaton's below-threshold market shares in 2002 and 2003, this reflects the difficulties that International and Eaton experienced in

<sup>191</sup> EATON-00639622.

<sup>192</sup> EATON-00659021-22.

<sup>193</sup> EATON-00648434.

<sup>194</sup> EATON-00705558-70, at 61.

<sup>195</sup> See, e.g., EATON-00648434 (Eaton considers providing certain customer services "contingent upon International holding off the Freedomline project").

<sup>196</sup> ITE-000091.

<sup>197</sup> See EATON-00077054.

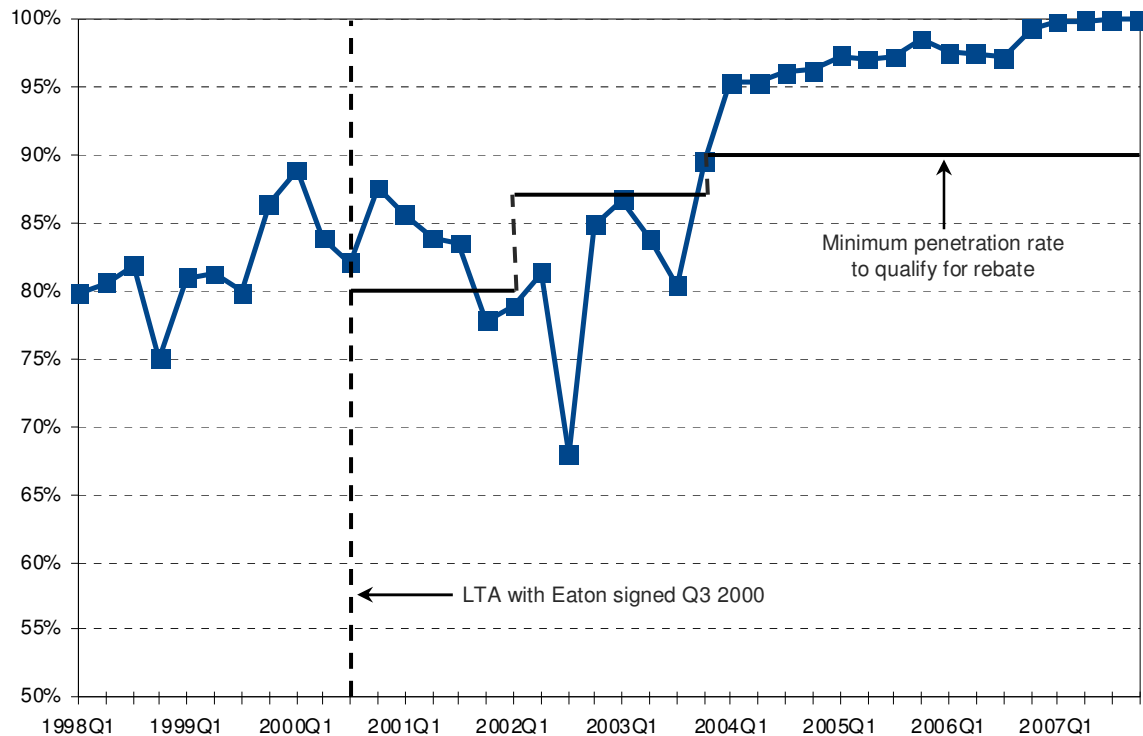
<sup>198</sup> EATON-01006219 (October 8, 2001 meeting); EATON-00999730-00999733 (October 30, 2001 meeting); EATON-00999737-740 (November 26, 2001 meeting).

<sup>199</sup> EATON-00999737-740.

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growing Eaton's share by an amount sufficient to fully comply with the terms of the LTA, as discussed further below.

**Figure 12: Eaton's penetration at International**



- (151) In 2002, International implemented various actions discussed with Eaton in 2001 to deter continued ZFM sales at International. Among these, International artificially raised the price of ZFM transmissions in its data books,<sup>200</sup> removed ZFM 9- and 10-speed transmissions from the 8500 and 8600 truck series, and removed ZFM transmissions and clutches from all sales programs.<sup>201</sup> These activities coincided with Eaton's "Operation Grand Slam," the purpose of which was to "eliminate TTC and Meritor from International Trucks."<sup>202</sup> By the end of 2002, Eaton reported that "International and Eaton have jointly developed a strategy to combat the

<sup>200</sup> See EATON-00077054, p. 2, ("International Sales Plan HD Trans 021.xls", April 18, 2002). In this document Eaton reports that "International took the unprecedented move and artificially raised Meritor in the Databook." See also EATON-00970671 (October 2002), in which Eaton reports that International implemented a \$150 list price increase across all Meritor transmissions.

<sup>201</sup> See EATON-00970671.

<sup>202</sup> EATON-00077049-53.

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Meritor [pull-through] strategy, which has allowed us to uncover a number of roadblocks that involved sales personnel and dealer issues.”<sup>203</sup>

- (152) Throughout 2003, Eaton and International continued their “partnership meetings,” in which they further discussed ways to increase Eaton transmission share at International at the expense of ZFM.<sup>204</sup> In May 2003, the Eaton/International growth team determined that for the rest of the year, 90.63% of anticipated orders would have to be Eaton transmissions for International to meet its share target. To achieve that goal, International removed ZFM manual transmissions from the Diamond Spec warranty program.<sup>205</sup> International also provided a daily report to Eaton of “key Meritor users,” which Eaton could use in its conversion efforts.<sup>206</sup>
- (153) Despite International and Eaton’s joint efforts to prevent ZFM “pull-through,” International continued to have problems preventing sales of the FreedomLine. This created a problem for International because the FreedomLine was included in the growth rebate penetration calculation. Accordingly, sales of the FreedomLine threatened International’s ability to obtain rebates.<sup>207</sup> Beginning at least by May 2003, International repeatedly requested that the FreedomLine be excluded from the penetration calculation, especially given that Eaton did not have an equally available competing product.<sup>208</sup> Eaton denied these requests, even though it recognized that doing so would mean that International would miss its rebate share level number.<sup>209</sup>
- (154) When Eaton’s penetration at International fell slightly short of the penetration target established by Eaton in September 2003, Eaton used the fact that International’s executives were in dire need of Eaton’s rebate payments to achieve their financial goals for fiscal year 2003 and increased its pressure on the OEM.<sup>210</sup> Eaton agreed to pay International a share of the growth rebate for fiscal year 2003, and in return, International agreed to ensure that Eaton would achieve a 90% penetration in fiscal year 2004.<sup>211</sup> Specifically, International and Eaton made “joint commitments” to increase share, including: “Agree to develop a mutually agreeable plan to meet or exceed the fiscal 2004 share goal of 90.00% by November 30, 2003,” and “Agree to work jointly to convert ZFM orders as they become visible in the

<sup>203</sup> EATON-00211648–59, at 55. See also EATON-00684795–806.

<sup>204</sup> See, e.g., EATON-00984132–34.

<sup>205</sup> EATON-00107782–89.

<sup>206</sup> EATON-01202611–19 at 19.

<sup>207</sup> See, e.g., EATON-01217124–125 (inability to sell competing product “may cause them to miss their rebate target”).

<sup>208</sup> See, e.g., EATON-01208178.

<sup>209</sup> EATON-00971532–36.

<sup>210</sup> EATON-01202757–758.

<sup>211</sup> See EATON-00710490; EATON-01202760.

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system.”<sup>212</sup> Moreover, if International failed to achieve the 90% target for 2004, it would have to return the rebate provided for FY2003.<sup>213</sup> This did not happen, however, as the cooperative efforts of International and Eaton prevented International having to return any funds. In FY2004, Eaton’s penetration at International exceeded 95%, which Eaton saw as a “reason for joint celebration.”<sup>214</sup> As can be seen in Figure 12, the financial pressure that Eaton placed on International during 2003 had its intended effect.

- (155) Eaton’s financial pressure on International to exclude ZFM from the market continued in 2004. When in the fall of 2004, International’s accounting office committed an error and missed the payment of an invoice by two days, Eaton withheld the International “terms rebate” for prompt payment.<sup>215</sup> Although these “terms rebates” were not explicitly based on Eaton achieving a specific penetration share at International, Eaton used them as leverage to coerce International into undertaking further exclusionary actions against ZFM. Specifically, Eaton promised International that Eaton would pay a portion of the “terms rebates” at issue, if International agreed, among other things, to eliminate the FreedomLine from International’s Diamond Spec program.<sup>216</sup>
- (156) In 2005, International and Eaton began negotiations to enter into a new LTA. In approaching the negotiation, International recognized that “the biggest threat to International would be that we would create [a] single sourcing environment in which we would have very little leverage to control our pricing.”<sup>217</sup> In these negotiations, International viewed Eaton as a “monopolist,”<sup>218</sup> and both parties recognized that International had no other viable options for the supply of manual transmissions in North America.<sup>219</sup>
- (157) In 2007, the parties executed a new LTA, effective January 1, 2007.<sup>220</sup> It appears that while International was not pleased with the terms of the new LTA with Eaton, International entered into the LTA because International lacked alternative transmission suppliers and

<sup>212</sup> EATON-01202760–61, at 60.

<sup>213</sup> EATON-01132473–476, at 473.

<sup>214</sup> EATON-00109286–98, at 86.

<sup>215</sup> A “terms rebate” is a discount provided for payment of an invoice within a specified number of days.

<sup>216</sup> EATON-01189681. Although the FreedomLine was not removed from the Diamond Spec at that time, by May 2006, International had removed the FreedomLine from the International data books. ZFMA0034818. See also ITE-000295-297, at 296.

<sup>217</sup> EATON-00109432.

<sup>218</sup> ITE-001421–24.

<sup>219</sup> EATON-00581725–26.

<sup>220</sup> Between the expiration of the pre-existing LTA in 2005 and execution of the new LTA in 2007, the parties continued to operate under the contractual terms and obligations of the pre-existing LTA. ITE-001350-366, at 351.

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needed Eaton's transmissions to build its trucks.<sup>221</sup> In FY2007, Eaton's HD transmission penetration at International exceeded 97%.<sup>222</sup>

### 8.3. Eaton's foreclosure of ZFM at PACCAR

- (158) Eaton has been PACCAR's main supplier for HD transmissions since the late 1980s, with Eaton's market share consistently hovering around 90% or higher for HD transmissions.<sup>223</sup> Before 2001, the supply relationship between PACCAR and Eaton was governed by a series of agreements that were generally for a period of three years, with the option to renew for an additional year or two. In 1997, for example, Eaton and PACCAR entered into a long-term supply agreement for the sale of HD transmissions (among other drivetrain components). At that time, Eaton's HD transmission share at PACCAR was approximately 94%.<sup>224</sup> The 1997 LTA was set to expire on June 30, 2000, although the LTA provided for two one-year extensions by mutual agreement.<sup>225</sup>
- (159) In 2000, PACCAR and Eaton began negotiating a new LTA to replace the 1997 agreement, which resulted in a seven-year supply agreement (longer than any previous agreement) effective July 1, 2000.<sup>226</sup> Effective January 1, 2001, the LTA required PACCAR to offer Eaton transmissions as the Standard or Preferred Option in its data books. The Preferred Option requirement, which was not a requirement in the 1997 LTA, was defined as "the lowest priced option in the Data Book for comparable products." In other words, Eaton and PACCAR agreed that all competitor transmissions would be priced at a premium to comparable Eaton transmissions.<sup>227</sup>
- (160) While the 1997 LTA provided PACCAR with a price reduction (ranging from 1–3% over the life of the LTA), the 2000 LTA provided PACCAR with a 1% price increase on mechanical transmissions effective July 1, 2001.<sup>228</sup> Eaton also paid PACCAR a \$1 million lump sum payment "in lieu of certain price reductions," an amount that was reduced by half from the original negotiations.<sup>229</sup> This lump sum payment was reduced by half from the original

<sup>221</sup> Deposition of Mark Meegan at 18:2–23.

<sup>222</sup> ITE-004331.

<sup>223</sup> PACCAR000610–11.

<sup>224</sup> EATON-00689878 at 880.

<sup>225</sup> PACCAR000099 at 000100.

<sup>226</sup> See EATON-00108475–8518. The LTA was not signed until May 2001, but the terms were retroactive to July 2000. PACCAR 000786.

<sup>227</sup> Floyd Dep. 45:11–15; 181:20–182:13.

<sup>228</sup> The 2000 LTA did provide for a 4% price decrease on the AutoShift effective January 1, 2001. EATON—00108478.

<sup>229</sup> PACCAR000043.

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amount offered; the original amount offered was contingent upon Eaton receiving data book exclusivity, a provision that was later abandoned.

- (161) Data book exclusivity for Eaton HD transmissions was contemplated during the negotiations, which concerned Kenworth, one of PACCAR's two divisions. As explained by Kenworth's General Manager and PACCAR Vice President, many Kenworth customers preferred ZFM products and the exclusion of these products from the data book would have made it more difficult for dealers to spec trucks.<sup>230</sup> In the final version of the long term agreement, ZFM products were not excluded from the PACCAR data book, but they were sold with a price penalty.<sup>231</sup>
- (162) The 2000 LTA also contained a share-based rebate program, in which PACCAR was paid rebates based on the utilization percentages of Eaton transmissions installed in Kenworth and Peterbilt trucks. Specifically, the agreement stated that "[t]he utilization percentages will be calculated for each product line and the lowest utilization percentage among those product lines will apply. No rebates will be paid for any product line if the utilization percentage for any product line is less than 90%." Automatic transmissions were excluded from the calculation, since Eaton did not make an automatic product; all mechanical and automated mechanical transmissions were included in the share calculation, however, including ZFM's 2-pedal FreedomLine transmission. The FreedomLine was included notwithstanding the fact that Eaton did not offer a 2-pedal at the time the LTA was signed. The rebates were equal to 2% of PACCAR's purchases for a share between 90% and 95% and to 3% for a share greater than 95% (the maximum rebate).
- (163) Eaton's exclusionary intent in entering into the new long term agreement with PACCAR emerges clearly from a December 1999 internal review of the parties' previous supply agreement. In this document Eaton unambiguously states that one of the main objectives of a future long term agreement was to "leverage position and pricing to exclude ZF / Meritor from PACCAR N.A."<sup>232</sup> Eaton's exclusionary intent raised serious concerns at PACCAR. In an interoffice communication about "Eaton performance and the proposed LTA" dated February 2001, a Kenworth executive states that Eaton wants to tie the LTA rebate share to the AutoShift and "to eliminate the new Meritor automated mechanical (FreedomLine) from our data book and Prospector. We feel strongly that this should not be allowed. The Autoshift product is highly unreliable and failure prone and has a terrible reputation with customers. ...

<sup>230</sup> See PACCAR 000202.

<sup>231</sup> See EATON-01408524.

<sup>232</sup> See EATON-00689878, pp. 14 and 17.



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Rather than compete Eaton appears to want to block Meritor products from use in Kenworth trucks.”<sup>233</sup>

- (164) Starting in September 2001, only a few months after the LTA was signed, PACCAR requested that Eaton exclude automated mechanical transmissions (at that time, Eaton’s AutoShift and ZFM’s FreedomLine) from the calculation of Eaton’s penetration for the share-based rebates, citing the competitive clause in the LTA.<sup>234</sup> As of September 1, 2001, Kenworth was reporting a 40% failure rate of AutoShifts in the field, which caused Kenworth Marketing to recommend that the AutoShift be removed from the Kenworth data book.<sup>235</sup> PACCAR was concerned that the poor reliability of the Autoshift and the absence of an Eaton 2-pedal automated mechanical (which would not be released until 2004) would make it difficult to convert fleets away from the FreedomLine transmission to Eaton transmissions, especially given the FreedomLine’s growing popularity in the market.<sup>236</sup> This would harm PACCAR’s sales and put its share-based rebates at risk.
- (165) On December 12, 2001, Eaton wrote back to PACCAR, disagreeing with PACCAR’s invocation of the competitive clause.<sup>237</sup> In a letter dated the same day, PACCAR again wrote to Eaton, repeating its intent to invoke the competitive clause, stating that the 2-pedal (which Eaton did not have) was “technologically advanced” and attaching a proposed amendment to the LTA which excluded the FreedomLine from the rebate calculations.<sup>238</sup>
- (166) On January 24, 2002, Eaton responded to PACCAR’s December 12th letter, refuting PACCAR’s assertions that the AutoShift (a 3-pedal) was not competitive with the FreedomLine, and stating that Eaton “will not execute the amendment to the LTA.”<sup>239</sup>
- (167) PACCAR tried on two more occasions to exclude the FreedomLine transmission and/or clutch from the LTA rebate calculation. In May 2002, PACCAR requested that Eaton remove the FreedomLine clutch sales from the calculation because Eaton did not have a clutch that could be paired with the FreedomLine. Eaton denied this request, and in an email from Eaton on June 24, 2002, denying relief on the rebate calculations, Eaton made a point of stating that

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<sup>233</sup> See PACCAR 000202.

<sup>234</sup> See PACCAR 000667.

<sup>235</sup> EATON-00438105 at 115.

<sup>236</sup> See document PACCAR 000656, EATON-00976400 and EATON-00685867.

<sup>237</sup> PAC000661.

<sup>238</sup> PAC0000656.

<sup>239</sup> PAC000654.

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60% of PACCAR's transmission requirements were products not available from any supplier but Eaton.<sup>240</sup> In addition, Eaton promised that its 2-pedal would be launched "late this year."

- (168) In September 2002, a full year after PACCAR's first request to exclude the automated mechanicals from the rebate calculation, PACCAR again wrote to Eaton, "requiring" that Eaton exclude the FreedomLine because Eaton's 2-pedal (the UltraShift) would now not be ready for launch until the second quarter of 2004.<sup>241</sup> Eaton again responded negatively, stating: "We do not agree with this position and will not accept removing the ZF Meritor FreedomLine from the rebate calculation."<sup>242</sup> Eaton again pointed out the fact that over 60% of PACCAR's transmission purchases from Eaton were for transmissions that no other supplier sold. PACCAR later told Eaton that it felt like Eaton "holds them 'hostage' by virtually forcing them to not offer products their customers demand."<sup>243</sup>
- (169) While the ultimate resolution of the FreedomLine exclusion issue is unclear, it is clear, both from the documents recounted above and from deposition testimony, that PACCAR had no ability to unilaterally invoke the competitive clause and exclude ZFM's products from the rebate calculation.<sup>244</sup> This stands in sharp contrast to Eaton's later threat (in 2004) to terminate the LTA because PACCAR was resisting a base price increase on transmissions as well as increased surcharges.<sup>245</sup> PACCAR recognized that if Eaton terminated the LTA, Eaton would likely still supply product to PACCAR, but at much higher prices, given that Eaton was the only supplier in the market for HD performance transmissions (which made up the majority of PACCAR's requirements).<sup>246</sup>
- (170) Achieving complete exclusivity at PACCAR was particularly important for Eaton, because both Peterbilt and Kenworth launched the FreedomLine by mid-2002, earlier than the other OEMs.<sup>247</sup> This put Eaton's traditionally very high share at PACCAR at risk, given that Eaton did not have a product to compete with the FreedomLine for at least another year.
- (171) PACCAR had a larger share of trucks used in performance applications than the other OEMs, and it was therefore even more vulnerable to Eaton's threat to withdraw the rebates on performance transmissions (which were part of the utilization percentage calculation) than

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<sup>240</sup> EATON—00969271.

<sup>241</sup> EATON—01405414.

<sup>242</sup> EATON—01405703.

<sup>243</sup> EATON—00387108.

<sup>244</sup> Lundahl Dep. 93:9–23.

<sup>245</sup> EATON—01382522.

<sup>246</sup> Lundahl Dep. 29:11–30:24.

<sup>247</sup> EATON—00438171 at 174.

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the other OEMs.<sup>248</sup> The fact that Eaton had little or no competition in the performance market made it easier for Eaton to penalize the OEMs in this market at a very low cost or no cost at all. Eaton was well aware of PACCAR's vulnerability to Eaton's ability to exercise its monopoly power in transmissions, and Eaton reminded PACCAR of this in numerous documents.<sup>249</sup> As a consequence, PACCAR was aware of its need to maintain Eaton's share level in order to minimize its exposure to financial penalties by Eaton in the form of either lost rebates or higher prices (effectively equivalent actions by Eaton).

- (172) As can be seen in Figure 13, in the second quarter of 2003 PACCAR did not meet the 95% Eaton share that would have allowed it to obtain the maximum amount of the rebates. PACCAR missed the 95% threshold by 37 units because Federal Express, a large PACCAR fleet, switched from Eaton transmissions to Meritor transmissions due to ZFM's sales activities at Kenworth.<sup>250</sup> PACCAR blamed Eaton for the change in orders because Eaton did not match ZFM's incentives to FedEx. Eaton, however, exploited the situation by offering to pay PACCAR the maximum rebates only if PACCAR agreed to stop running competitive FreedomLine promotions and work with Eaton to review and convert competitive orders in the backlog.<sup>251</sup> PACCAR responded with a counterproposal, and the issue was resolved, with Eaton agreeing to pay the rebates so long as PACCAR agreed not to promote the FreedomLine and to work with Eaton to convert certain fleets.<sup>252</sup>
- (173) In July 2003, around the same time as Eaton and PACCAR agreed that PACCAR would stop promoting the FreedomLine and would work with Eaton to convert fleets, PACCAR imposed an artificial and significant data book price penalty on the FreedomLine.<sup>253</sup> Throughout the end of 2003 and into 2004, PACCAR and Eaton worked jointly to convert fleets from ZFM transmissions to Eaton transmissions.
- (174) Figure 13 shows that the actions undertaken by PACCAR and Eaton to ensure PACCAR's compliance with the terms of the LTA yielded the outcome Eaton desired almost immediately, and Eaton's penetration at PACCAR rose significantly (to above 98%) during the last two quarters of 2003.

<sup>248</sup> During the 2001–2005 time period PACCAR's total expenditure on performance transmissions ranged between 68% and 72% of its total annual expenditure on heavy duty transmissions (excluding expenditure on Allison transmissions).

<sup>249</sup> See EATON-01405703. This letter is undated, but Tom Lundahl of PACCAR testified to receiving it. Lundahl 106:1–107:1. In this letter, dated September 23, 2002, Eaton informs PACCAR that it will not exclude the FreedomLine from the quarterly share calculation for the rebates and argues that "Eaton could just easily take the position that [Eaton] should exclude product[s] that the competition does not offer, such as 8LLs, 15 and 18 speeds."

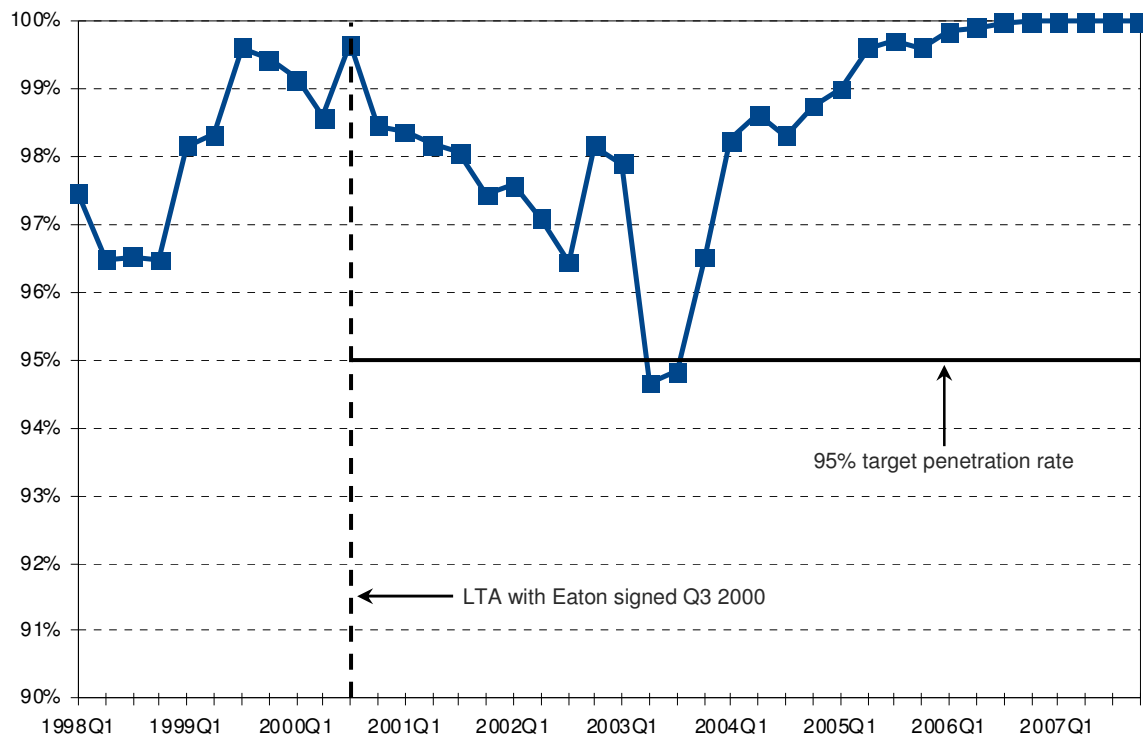
<sup>250</sup> PAC001040

<sup>251</sup> See EATON-00387109.

<sup>252</sup> EATON-00971538

<sup>253</sup> See EATON-01381709, p. 2: "Peterbilt [a division of PACCAR] have indicated they had to mark-up the FreedomLine considerably to get the Ultrashift pricing at a competitive level in the databook."

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**Figure 13: Eaton's penetration at PACCAR**

#### 8.4. Eaton's foreclosure of ZFM at Volvo/Mack

- (175) In the mid-1990s, Meritor began negotiations with Mack to purchase or license Mack's transmission technology. This transaction would have provided Meritor with the means to develop a more complete transmission product line, including a line of performance transmissions (13- and 18-speed transmissions), thereby enhancing Meritor's ability to provide competitive alternatives at all OEMs to the Eaton transmission product line. In December 1996, Mack decided that it would not sell the transmission business, but was willing to explore the idea of licensing its technology to Meritor so that Meritor could broaden its line of transmissions. In April 1997, however, Mack informed Meritor that it could not license its technology to Meritor, nor could it agree to give Meritor standard position in Mack's data books for Meritor's 9- and 10-speed manual transmissions.
- (176) Mack informed Meritor that its decision was determined by the fact that: a.) Eaton told Mack that if Mack sold or licensed its 13- and 18-speed technology, Eaton would sue Mack for a purported patent claim that Mack (and Meritor) believed to lack validity; and b.) Eaton's

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strength in the performance market (in which Meritor did not currently have a competing product available) was too great to risk price retaliation from Eaton.<sup>254</sup>

- (177) After Mack and Meritor were prevented from pursuing this business opportunity, Mack entered into a five-year LTA with Eaton, effective July 1, 1997 through June 30, 2002. One term of this LTA, titled “Patent Matters,” contained Eaton’s commitment not to sue Mack for alleged patent infringement relating to Mack’s 13- and 18-speed transmissions so long as (1) Mack did not breach the LTA; and (2) Mack transmissions were installed only in Mack vehicles.<sup>255</sup> Another clause stated that if Mack chose to license or have another party market the T-200 series transmissions to customers other than Mack, then “Eaton will be granted a right of first refusal during the Term [of the agreement] to market those transmissions.” These clauses in the LTA are consistent with Mack’s explanation to Meritor as to the reason it could not enter into an agreement with Meritor to license its HD transmission technology.
- (178) Through the 1997 LTA, Eaton also obtained standard position on certain transmissions, and where not standard, it was made “preferred supplier options,” meaning that optional Eaton transmissions would be priced “no less favorable than competitive products.” As for its standard transmissions, Eaton and Mack agreed that Mack transmissions would be priced higher than Eaton’s competing transmissions.
- (179) Unlike the other OEMs, Mack was the only OEM that offered its own heavy-duty transmissions to its truck customers. Thus, not only did Eaton and Volvo/Mack have a vertical relationship as a parts supplier (Eaton) and an assembler of finished vehicles (Mack), but Eaton and Mack also had a horizontal relationship in that they competed with each other in selling their transmissions to truck purchasers. Thus, any agreement between Eaton and Mack in which Mack either agrees to increase the price at which it will sell its own transmissions to end customers, whether the price agreement is expressed in absolute terms or relative to the price of Eaton’s transmissions, will necessarily harm competition.
- (180) As such, Eaton and Mack’s agreement on transmission pricing for the companies’ respective and competing heavy-duty transmissions constituted a horizontal price-fixing agreement that began no later than 1997 and continued into Eaton’s “OEM partnership” period.<sup>256</sup> This conduct between Eaton and Volvo/Mack as horizontal competitors is typically considered *per se* illegal price-fixing potentially subject to criminal prosecution and financial penalties. Indeed, Mack and Eaton implemented the agreement and Eaton enforced it to the detriment

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<sup>254</sup> ZFMA0369760.

<sup>255</sup> VM 000158.

<sup>256</sup> EATON-00908986, at 987 (Eaton describes the period after 1999 as the “partnership” period as it relates to the “Fuller Transmission Pricing Strategy”).

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of consumers. Between 1999 and at least into 2002, consistent with the companies' agreement,<sup>257</sup> the premium Mack charged for Mack transmissions competing with Eaton transmissions was \$3,000 to as high as \$3,500.<sup>258</sup> In these years, Mack sought to reduce the premium from \$3,000, but documents produced by Eaton indicate that Eaton did not permit the reduction until some time in 2002, and even then the premium remained at \$1,500.<sup>259</sup> Accordingly, end customers who selected Mack (or ZFM) transmissions subject to the Eaton/Mack agreement paid more for those transmissions than they would have in a competitive environment. Additionally, the premium pricing played a significant role in growing Eaton's share at Mack during the term of the LTA by 35%.<sup>260</sup> The terms of the horizontal price-fixing agreement further inform my opinion as to the anticompetitive purpose and effect of broadly similar terms in the other LTAs at issue in this case.

- (181) Parallel to the 1997 Eaton/Mack LTA, VTNA and Eaton entered into a two-year LTA in 1999, which could be extended for two years. Prior to this agreement, the parties had entered into a transmission supply agreement in 1990 that was extended in 1992.<sup>261</sup> This agreement provided Eaton with standard position and the extension provided for rebates based on Eaton's combined share penetration at VTNA for axles and transmissions. It did not provide guidance regarding data book pricing. In 1997, VTNA sent Eaton a letter of understanding, which referenced the following "Eaton requirements:" "No credit position for competitive transmissions... No competitive drivetrain packages... [and the inclusion of Eaton in VTNA] promotionals, incentives, and program packages at parity or preferred positioning."<sup>262</sup> These "Eaton requirements" are consistent with the anticompetitive campaign Eaton executed to eliminate competitive transmission offerings, and escalated during the "OEM partnership" period.
- (182) The 1999 agreement stated that Eaton would be the standard offering for "all VTNA truck models" (except for the WAH where Eaton would be a "no charge option").<sup>263</sup> As the standard offering, Eaton's transmissions and clutches "will be assembled into each truck of a Qualifying Model, which is built by VTNA" unless a "customer expressly requests an alternative" or Eaton does not make a transmission appropriate for the intended application. The 1999 agreement also provided a share-based rebate beginning at 75% penetration of Eaton HD transmissions (1% rebate), with a maximum rebate of 4.5%, at 95% penetration. In

<sup>257</sup> See VM 000161.06 (1997 LTA Exhibit B, titled: "Transmission Target Pricing Differential")

<sup>258</sup> See EATON-00380547; EATON-00380990; VM2\_00018467-485, at 472.

<sup>259</sup> Id. See also VM2\_00021798.

<sup>260</sup> Deposition of Tony Lopes 59:22-60:17; VM2\_00018467-485, at 470.

<sup>261</sup> VM 000162-179 (1990 agreement); VM 000180 (1992 extension).

<sup>262</sup> VM 000199-200.

<sup>263</sup> VM 000201.

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conjunction with the rebates, “It will be VTNA’s and Eaton’s goal to achieve maximum market penetration with the standard product...”<sup>264</sup> Through its contractual dealings with Volvo, Eaton maintained HD transmission share at VTNA at around 80% from 1993 into 2001,<sup>265</sup> and grew that share to 85% in 2002.<sup>266</sup>

- (183) When the Mack 1997 Supply Agreement expired on June 30, 2002, Mack reversed its pricing strategy and priced Eaton performance transmissions “at upcharges in excess of 1500–\$2800 compared to comparative transmission models.”<sup>267</sup> As part of the parties’ negotiation for a new contract, Eaton was willing to “forfeit the previous guaranteed minimum \$1,500 list advantage” (i.e., the amount set pursuant to the parties’ price-fixing agreement), but it informed Mack that it needed to “have a competitive price position in the spirit of our partnership agreement to assure we will not experience significant share erosion in this [performance] segment at Mack.”<sup>268</sup> Mack then entered a new LTA effective October 1, 2002, providing Eaton “standard/preferred” position on Mack’s highway models and optional position on Mack’s performance transmissions.<sup>269</sup> In Eaton’s position as Mack’s “standard/preferred” supplier, Mack agreed to price covered Eaton HD transmissions lower than competitive products, whether manufactured by ZFM, Mack, or any other supplier of competitive HD transmissions.<sup>270</sup>
- (184) Also effective October 1, 2002, VTNA entered into a five-year LTA with Eaton.<sup>271</sup> The agreement required VTNA to position Eaton transmissions as standard/preferred in its data books for all VTNA models. Both the VTNA and Mack agreements also included a share-based rebate program for which Volvo/Mack qualified if it purchased a combined share of at least 65% (and starting in 2004, at least 70%) of all its heavy duty transmissions (excluding automatic transmissions) from Eaton.<sup>272</sup> Volvo/Mack would obtain the maximum rebate percentages by purchasing 78% of its transmissions from Eaton. The LTAs also included a termination provision, which provided Eaton the right to terminate the LTA should Eaton’s

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<sup>264</sup> VM 000201, at 207.

<sup>265</sup> EATON-00908986, at 998.

<sup>266</sup> VM2\_00022577, at 580.

<sup>267</sup> See VM2\_00021798.

<sup>268</sup> VM2\_0002179.8.

<sup>269</sup> See VM000224.

<sup>270</sup> Deposition of Tony Lopes 73:6–12.

<sup>271</sup> See EAT00100630 and EAT00100666 [is one of these the same as VM000224? Use one or the other]. The 2002 Eaton/Mack and Eaton/VTNA agreements were virtually identical to one another and the share-based rebates were based on a combined share of Eaton transmissions installed in Volvo and Mack trucks. Shortly before the LTA was signed, VTNA and Mack became part of the same company and from that time forward, Eaton dealt with Volvo/Mack as one entity.

<sup>272</sup> See, e.g., VM 000084-119, at 102.



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combined transmission share at VTNA and Mack fall below 68%.<sup>273</sup> Additionally, “year over year pricing” opportunities on transmissions for both VTNA and Mack were contingent on Volvo/Mack maintaining combined Eaton transmission penetration at 68%.<sup>274</sup>

- (185) Eaton viewed this contract as a “significant win” and the “final LTA for significant NAFTA players.”<sup>275</sup> With the signing of the contract, Eaton had LTAs providing for standard position and other competitive advantages with 100% of the distribution channel for HD transmissions.
- (186) As at other OEMs, Eaton’s ability to influence OEM behavior as it related to the release of the ZFM FreedomLine appears to have existed at Volvo/Mack. For instance, an internal Eaton document states that Chris Konkel, its sales manager for Volvo, “has successfully built marketing relationships to help Volvo focus on Eaton automation products and indefinitely delay the engineering work on the FreedomLine.”<sup>276</sup>
- (187) A year after Eaton signed the 2002 Volvo/Mack LTAs, the parties identified a pricing discrepancy in Mack’s data book that was in conflict with the contractual agreement to provide Eaton with “standard/preferred” positioning. In particular, by November 2003, Mack’s T310 transmission was priced more than \$1,000 below Eaton’s FRO-16210C transmission, and Mack’s T309 transmission was priced more than \$800 below Eaton’s RTX-16709B transmission.<sup>277</sup> On November 4, 2003, Eaton informed Volvo/Mack that it was in “contract default” because of Mack’s pricing. By February 2004, Eaton’s HD Transmission share at Volvo/Mack was dropping precipitously due to a combination of increased customer demand for ZFM’s FreedomLine and increased sales of Mack’s T300 series.<sup>278</sup> The parties entered into negotiations to resolve the issue.
- (188) In March 2004, Mack agreed to “adjusting the T310 and T309 to \$1 above our [Eaton’s] product.”<sup>279</sup> Mack realized that this pricing discrepancy “is jeopardizing the annual Eaton cost improvements which is worth millions.”<sup>280</sup> In May, 2004, however, Eaton threatened to terminate the LTA with Volvo/Mack due to Mack’s pricing discrepancy.<sup>281</sup> As a result, Mack agreed with Eaton to raise the list price of Mack’s T309 and T310 transmissions by

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<sup>273</sup> Id. at 091.

<sup>274</sup> Id. at 098.

<sup>275</sup> See EATON-01164342, at 354.

<sup>276</sup> See Eaton’s internal evaluation of Chris Konkel, EATON-00207020.

<sup>277</sup> See EATON-01174848.

<sup>278</sup> VM2\_00034307.

<sup>279</sup> See EATON-00700928.

<sup>280</sup> See VM2\_00024308.

<sup>281</sup> See VM2\_00024309.

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approximately \$500 to resolve the issue.<sup>282</sup> Internal meeting notes at Volvo/Mack clearly show that Volvo/Mack was very concerned that if it did not correct the pricing on the Mack transmissions, its share-based rebates would be in “serious jeopardy.”<sup>283</sup>

- (189) At the same time that the parties were in discussions regarding the Mack pricing issue, Eaton was also attempting to increase its transmission prices. Eaton blamed this increase on increases in steel costs, but Volvo/Mack maintained that such a price increase fell outside of the LTA.<sup>284</sup> On June 29, 2004, Eaton and Volvo/Mack resolved the surcharge issue by agreeing to a .75% price increase of all Eaton transmissions based on “a fair settlement of Mack’s T310/T309 pricing strategy.”<sup>285</sup> With respect to the Mack transmission pricing issue, Volvo/Mack not only agreed to raise the price \$500/unit, but also agreed to “reimburse” Eaton \$607,000 for lost sales of Eaton transmissions.<sup>286</sup> These discussions, agreements, and payments clearly demonstrate that the horizontal price-fixing agreement between Eaton and Volvo/Mack was still in effect with the 2002 Volvo/Mack LTAs and therefore in effect for the duration of this contract into at least 2007.
- (190) Two months after the resolution of the steel surcharge and Mack pricing issues, Eaton again informed Volvo/Mack that the .75% increase was not enough and that it intended to implement a base price increase of 2% on transmissions, as well as variable surcharges.<sup>287</sup> Volvo/Mack informed Eaton that the request, like Eaton’s prior demand for increased pricing, was outside the scope of the contract.<sup>288</sup> Volvo/Mack ultimately agreed to accept the price increase, but only after, in Volvo/Mack’s words, Eaton “threatened again to stop shipment.”<sup>289</sup> Volvo/Mack viewed Eaton’s actions as taking “full advantage of its monopolistic position in the US market.”<sup>290</sup> Because Eaton by that point was “literally the only manual transmission and clutch supplier in North America,” Volvo/Mack felt constrained to accept Eaton’s final offer of a 1.29% price increase (plus monthly surcharges of 3.2%).<sup>291</sup>

<sup>282</sup> See VM2\_00024316. Mack further explained that Mack’s price did not include an oil cooler and customers must purchase the oil cooler for an additional charge, while Eaton’s price did include an oil cooler, suggesting that the \$500 increase in Mack’s price would be sufficient to position Eaton’s transmission at a more advantageous level.

<sup>283</sup> VM2\_00021025

<sup>284</sup> EATON-00714260

<sup>285</sup> See VM2\_00024354.

<sup>286</sup> VM2\_00024457.

<sup>287</sup> EATON—01125508. Volvo/Mack subsequently did an analysis of Eaton’s proposal and determined that it amounted to a 7% overall increase on the price of transmissions. VM2\_00002222.

<sup>288</sup> VM2\_00002249.

<sup>289</sup> VM2\_00024140.

<sup>290</sup> VM2\_00024140.

<sup>291</sup> VM2\_00002264.

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- (191) As 2007 approached (the expiration date of the LTA), Volvo/Mack and Eaton entered into another round of LTA negotiations. Volvo/Mack characterized the negotiations as “extremely difficult,” because, in material part, this was the “first negotiation without any competition (Meritor stopped Transmission production on December 31, 2006).”<sup>292</sup> Eaton complained during the negotiations that the previous LTA was unsuccessful and provided no growth for Eaton. Volvo/Mack disagreed, stating that “we just killed ARM transmission business with this contract.”<sup>293</sup> Ultimately, the parties agreed to a new five-year LTA that included a 5% increase on transmission prices over the term of the agreement.<sup>294</sup> The agreement runs through December 31, 2012.<sup>295</sup>
- (192) Figure 14 shows Eaton’s penetration at Volvo/Mack for the 1998–2005 time period for which data on Mack’s usage of transmissions manufactured by Mack, Eaton, and ZFM are available. By the end of 2007, Eaton’s share of HD transmissions at VTNA was 93%, and Eaton’s combined share at VTNA and Mack was 70%.<sup>296</sup>

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<sup>292</sup> VM2\_00017761, at 764.

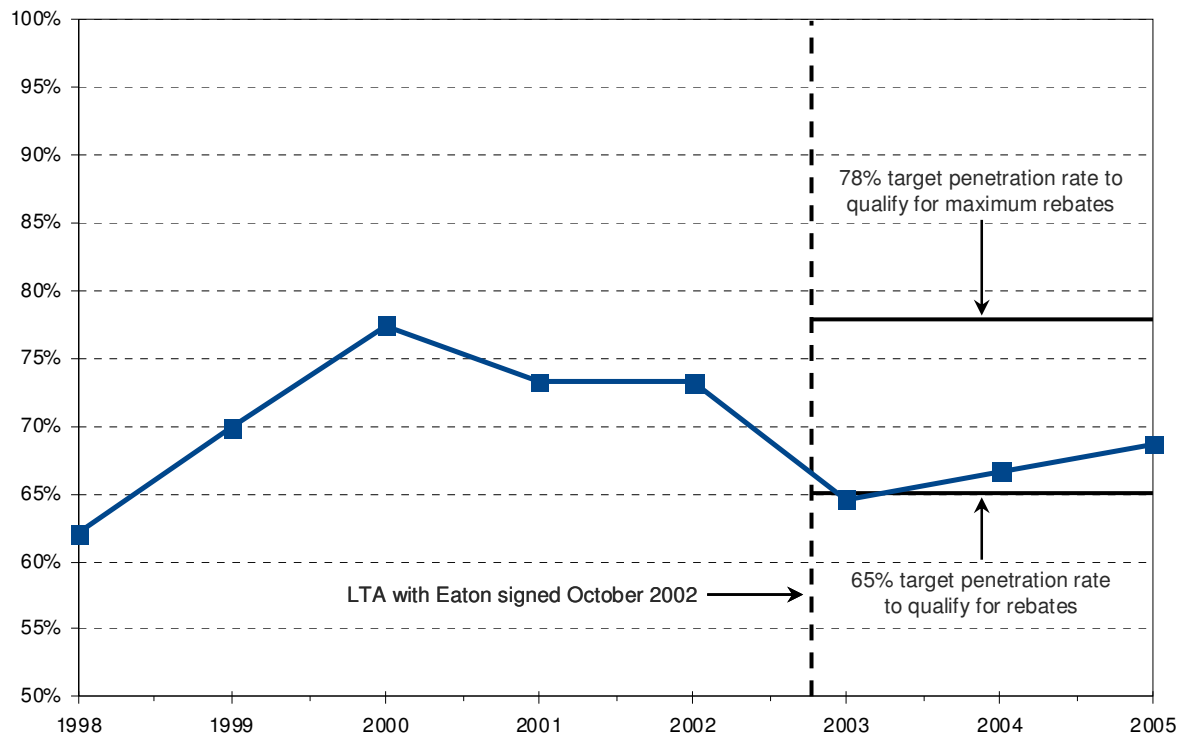
<sup>293</sup> VM2\_00002576.

<sup>294</sup> VM2\_000117761, at 764.

<sup>295</sup> This agreement has not been made available by Eaton.

<sup>296</sup> Bates White calculations based on Eaton and ZFM sales data and on Mack’s usage of its own HD transmissions in its trucks.

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**Figure 14: Eaton's penetration at Volvo/Mack**

## 9. Eaton's conduct excluded ZFM from the relevant market

### 9.1. Eaton's LTAs foreclosed ZFM from the market and caused ZFM to exit the market

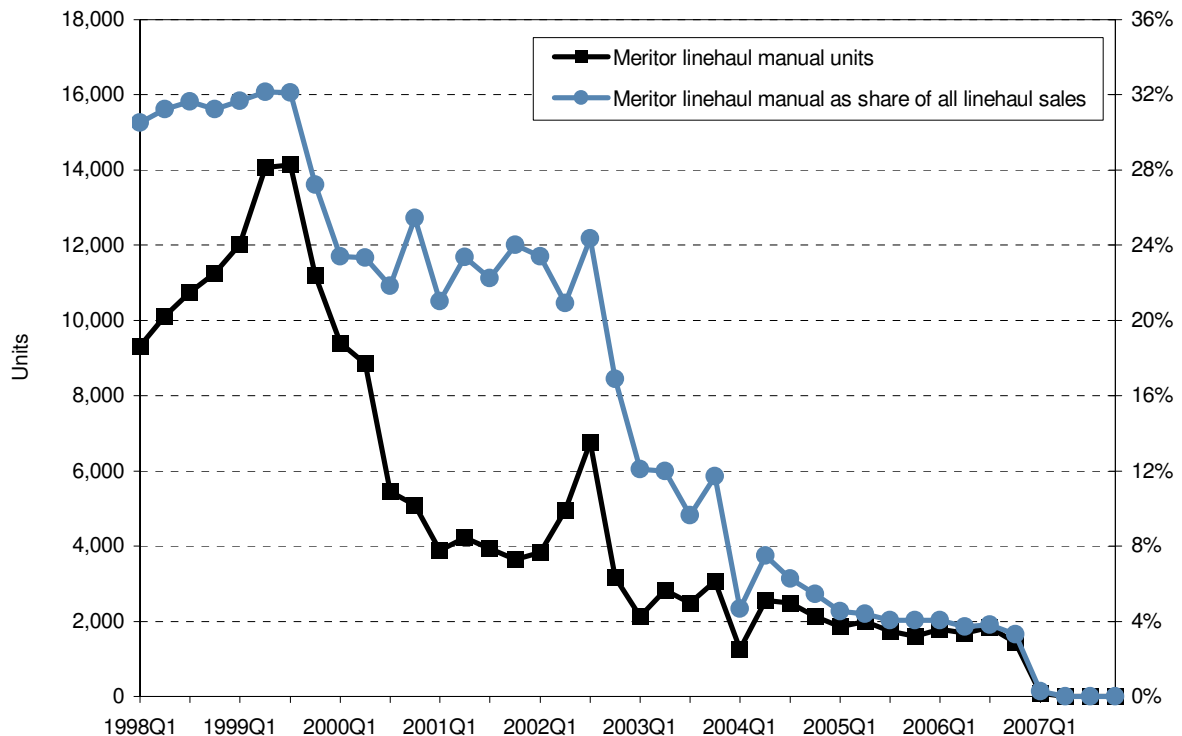
(193) By foreclosing ZFM from access to the OEMs, Eaton's exclusionary conduct caused ZFM's production of manual transmissions to fall below its minimum efficient scale and increased ZFM's production cost. This loss of scale and the resulting increase in cost progressively weakened ZFM as a competitor and eventually forced it to leave the market in 2007. Furthermore, Eaton's exclusionary conduct prevented ZFM from achieving the level of sales of automated manual transmissions that would have made it profitable to fully industrialize the production of the FreedomLine in North America. As a consequence, in December 2003, the ZF Meritor joint venture was dissolved, and ZF and Meritor abandoned their plans to manufacture the FreedomLine on a large industrial scale in North America.

(194) Figure 15 shows the total quarterly volume of manual transmissions sold by Meritor and the share of the volume of linehaul sales accounted for by these transmissions. Meritor's volume

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of manual sales fell significantly between the last quarter of 1999 and the first quarter of 2001 (from approximately 14,000 units per quarter to approximately 4,000 units per quarter) and again between the third quarter of 2002 and the first quarter of 2003 (from approximately 6,700 units per quarter to approximately 2,000 units per quarter).

**Figure 15: Meritor linehaul manual transmission unit sales and as share of the linehaul market**



- (195) An internal break-even analysis conducted by ZFM in October 2000 showed that ZFM estimated the volume of production of manual transmissions below which prolonged operation would not be profitable to be approximately 32,000 units per year (*i.e.*, 8,000 units per quarter).<sup>297</sup> According to this estimate, therefore, prolonged operation at the production volumes of 2001 would have not been sustainable. A Volvo document dated 2005 estimated that the minimum viable scale for Meritor manual transmissions was 15,000 units per year (*i.e.*, approximately 4,000 units per quarter).<sup>298</sup> This minimum scale is lower than that

<sup>297</sup> See ZFMA0356437-536 at 535.

<sup>298</sup> See VM042281. In this internal email Volvo states: "We are buying their [Meritor's] 10 speed at about 2,800 dollars today (this is necessary to sell against Eaton). After looking at their costed bill of material and allowing for assembly, burden and overhead added in, I am sure that they [Meritor] are losing money on every unit built. I looked at some earlier notes I had from a previous visit and they had stated that they needed 15,000 units to break even and make

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estimated by Meritor in 2000 because, as explained by Volvo, by 2005 Meritor had already reduced its scale of operations by, for example, significantly reducing their workforce.<sup>299</sup> Even if one were to accept the lower estimate provided by Volvo, starting at least in 2003, Meritor was not able to achieve sufficient production scale in order to remain in the market as a result of Eaton's anticompetitive actions.

## **9.2. Alternative explanations for ZFM's decline in sales and market share are unpersuasive**

- (196) Based on Eaton's responses to Plaintiff's Interrogatories, it appears that Eaton will allege that ZFM's decline in sales and market share—and thus its decision to exit the market—was not the result of Eaton's anticompetitive LTAs but rather a consequence of: a.) ZFM's failure to price its products competitively in the market; b.) quality problems associated with ZFM's transmissions; and/or c.) ZFM's overly optimistic expectations of the success of its FreedomLine transmission and the rate at which market demand for automated manual transmissions would grow. I have examined each of these alternative explanations in detail, as well as the potential impact of macroeconomic factors on ZFM's market exit, and I conclude that they are not persuasive. The data and documentary evidence is clear that Eaton's LTAs—and the various means undertaken by the OEMs to comply with the terms of these LTAs—were a significant factor, and indeed, the primary factor, in explaining the decline in ZFM's market share, preventing ZFM from attaining adequate scale in order to industrialize production of the FreedomLine in the U.S., raising ZFM's costs, and forcing ZFM to ultimately exit the market.

### **9.2.1. Econometric analysis indicates that Eaton's LTAs foreclosed ZFM from the market**

- (197) Both the documents and the above data clearly indicate the causal relationship between Eaton's LTAs and increases in Eaton's market shares. In Section 11 and Figure 35, below, I provide the results of an econometric model that shows the quite substantial impact of Eaton's LTAs on ZFM's market shares. The econometric model shows that the exclusionary LTAs entered by Eaton and the OEMs starting in July 2000 were associated with a substantial and statistically significant change in the evolution of ZFM's market share that went from a growth pattern to a steady decline. The econometric model and other evidence presented in Section 11 predicts that ZFM's share of all HD transmissions sold in NAFTA would have grown above 20% instead of declining to zero by 2007. Similar conclusions regarding the

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money. This year's business projection is only for 7,700 units. They have reduced some overhead and manpower cost, but not enough to close that big of a gap."

<sup>299</sup> See VM042280.

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effectiveness of Eaton's LTAs in excluding ZFM from the market can be obtained by analyzing the change in Eaton's shares at each of the OEMs discussed above.

- (198) At Freightliner, for example, Eaton's market share increased significantly shortly after Freightliner and Eaton entered their February 1999 LTA, and it increased again with the November 2000 LTA (see Figure 11), which represented a sharp departure from the increasing trend of Meritor penetration at Freightliner. Similarly, at International, Eaton's market share increased to well above 90% shortly after International agrees to increase Eaton's penetration to 90% or more for fiscal year 2004 in order to obtain the payment of the growth rebate for the previous fiscal year (see the discussion in paragraph (154)). At PACCAR, both the data and documents show that Eaton's LTAs were effective in limiting PACCAR's sales of ZFM and particularly the FreedomLine, even though PACCAR had previously expressed strong interest in the FreedomLine and expected it to be in demand by its customers. For Volvo/Mack, while the data during the relevant time period are more ambiguous, this is also the OEM at which Eaton's anticompetitive LTA has been in place for the longest period, since at least 1997, and the documents provide convincing evidence that Eaton's LTAs with Volvo/Mack had the effect of increasing the price of ZFM's transmission products, limiting it to a small share of Mack trucks, and thereby foreclosing ZFM from the market.
- (199) While Eaton's shares at each OEM do not move instantly in response to the execution of the LTAs, as it takes some time for the OEMs to update their data books, intensify their efforts to promote Eaton's transmissions to their end customers, and respond to other factors, *e.g.*, the periodic lack of adequate availability of Eaton's transmissions, the overall pattern in the data is clear. This conclusion is further supported by the documents cited extensively in Section 8 above detailing the specific efforts at each of the OEMs to increase the share of Eaton's transmissions through various means, *e.g.*, eliminating ZFM from the data book, converting truck customers with ZFM transmissions on the OEMs' order boards, imposing worse warranty terms and residual values on truck customers who choose ZFM transmissions, etc.

### **9.2.2. Macroeconomic factors do not explain ZFM's foreclosure from the market**

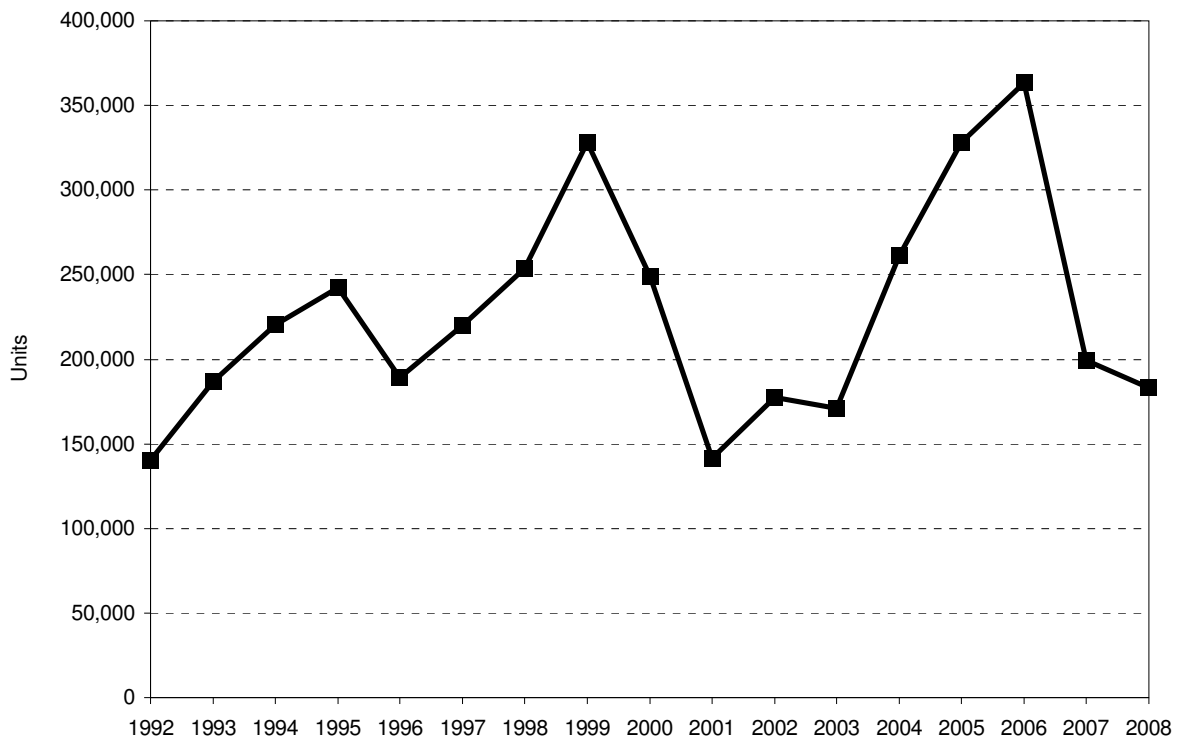
- (200) In analyzing whether Eaton's conduct was a material cause of the decline in market share and sales of ZFM transmissions, I also considered also the potential impact of macroeconomic factors. As shown in Figure 16, the total production of heavy-duty trucks in North America experienced a very significant decrease between 2000 and 2001. This led to a significant fall in the demand for HD Transmissions during this time period that was unrelated to Eaton's conduct and had an effect on ZFM's sales of manual transmissions. However, as shown in Figure 15, ZFM also experienced significant declines in its share of the linehaul market throughout this time period, *e.g.*, between the third quarter of 1999 and the first quarter of



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2000 and between the third quarter of 2002 and the first quarter of 2003. The first decrease in Meritor's market share takes place shortly after Eaton and Freightliner sign their first supply agreement in February 1999,<sup>300</sup> while the second decrease takes place after the numerous concerted anticompetitive actions undertaken by Eaton and the OEMs at the end of 2002 and in early 2003. Thus, while some portion of ZFM's decline in sales particularly in 2000–2001 can be explained by macroeconomic factors (a factor that I account for in my damages calculations, below), these factors cannot explain ZFM's decline in market *share* during the period at issue, nor do they explain ZFM's decline in sales during periods in which the market was growing.

**Figure 16: Total number of heavy duty trucks built in North America.**



### 9.2.3. ZFM's absolute and relative prices do not explain its foreclosure from the market

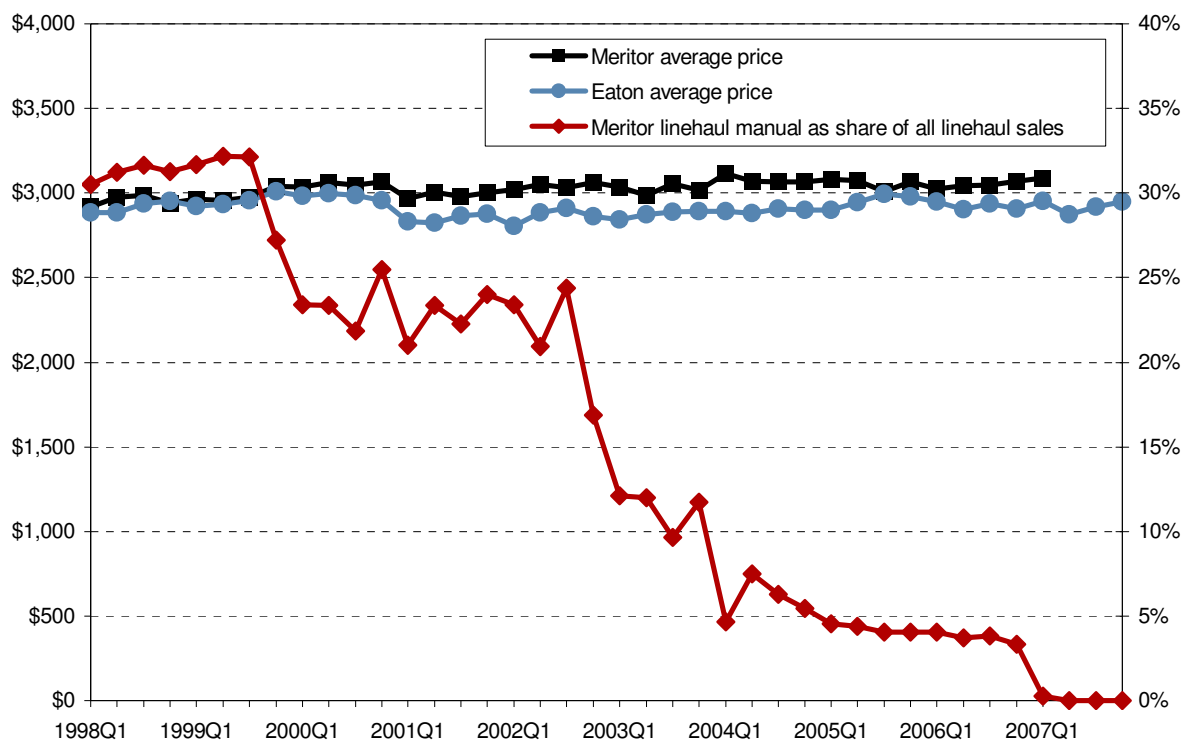
- (201) As shown in Figure 17, the decrease in ZFM's market shares cannot be attributed to changes in the price of its transmissions either. The figure shows the price paid by the OEMs for Eaton and ZFM linehaul manual transmissions, before the application of any rebate and

<sup>300</sup> This agreement removed Meritor from standard position in Freightliner's data books.

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excluding any field incentives (CE or SPIFFs) paid to end customers. The average price of ZFM transmissions remained virtually constant throughout the 1999–2006 period. In terms of relative prices, the average price of ZFM's linehaul manual transmissions was approximately equal to Eaton's average price up until late 2000, during a period in which ZFM's share was falling. While ZFM's average price for linehaul manual transmissions was approximately 4.4% higher than Eaton's average price for the same type of transmissions over the period 2001–2005, Eaton's price increases again in 2005, once ZFM is virtually excluded. Furthermore, a June 2007 Eaton document shows that the average selling price of Eaton transmissions at all OEMs increased significantly in 2006.<sup>301</sup>

**Figure 17: Eaton and ZFM average prices to OEMs for linehaul manual transmissions, gross of rebates and field incentives.**



- (202) Indeed, throughout the relevant period, Meritor attempted to engage in aggressive price competition in order to counter the effect of Eaton's anticompetitive LTAs with the OEMs, although to little effect, given the extent to which Eaton and the OEMs were able to control which transmissions were installed on the OEMs' trucks. In July 2001, ZFM shifted its principal marketing and sales efforts from trying to gain access to the OEMs, a barrier to

<sup>301</sup> See EATON-00699415-437 at 434-436.

entry that was by then virtually insurmountable for ZFM due to Eaton's LTAs, to "pull-through" marketing efforts directed towards the OEMs' end customers.<sup>302</sup> However, ZFM's significant "pull-through" sales and marketing efforts, including the payment of significant competitive equalization payments directly to the end customers in order to overcome the price disadvantage faced by ZFM transmissions in the OEMs' data books, were ultimately unsuccessful. Even when ZFM was successful in thereby convincing the OEMs' end customers to request ZFM transmissions, this was not sufficient to overcome the ability of the OEMs and Eaton—pursuant to the terms of the Eaton LTAs—to prevent ZFM from actually closing many sales, thereby relegating ZFM to a financially unsustainable share of the market.<sup>303</sup> In Section 10.9, below, I discuss further the harm to consumers caused by Eaton and the OEMs in foreclosing ZFM's ability to engage in price competition via promotional efforts directed at end customers, e.g., through the payment of SPIFFs and CE by transmission manufacturers to truck purchasers and particularly fleets.

#### **9.2.4. ZFM's decline in sales and market share was not due to overly optimistic expectations for the FreedomLine transmission**

- (203) Figure 18 shows the total quarterly volume of FreedomLine sales to all four OEMs. Notwithstanding the foreclosing effects of the LTAs between Eaton and the OEMs, the FreedomLine gained acceptance rapidly in the second half of 2002 and the first half of 2003, with its sales reaching approximately 1,600 units per quarter (6,400 units on an annual basis) in the third quarter of 2003. As I discussed above, this initial gain in volume by the FreedomLine was due to strong end customer preference for the FreedomLine and to ZFM's vigorous "pull-through" marketing activities in the field, notwithstanding the conduct by both Eaton and the OEMs to suppress demand for the FreedomLine throughout this time period. Indeed, the trend provided by the sharply increasing sales trajectory of the FreedomLine through the third quarter of 2003 provides a strong indication that in the absence of Eaton's LTAs, ZFM's FreedomLine transmission would have continued to gain considerable market share. Given the stringent market share provisions of Eaton's LTAs, however, the limited remaining portion of the market over which ZFM could compete was not sufficient to allow industrial production of the FreedomLine on a large scale in North America. Shortly after Eaton increased its pressure on the OEMs in 2003, it became apparent to ZFM that it would

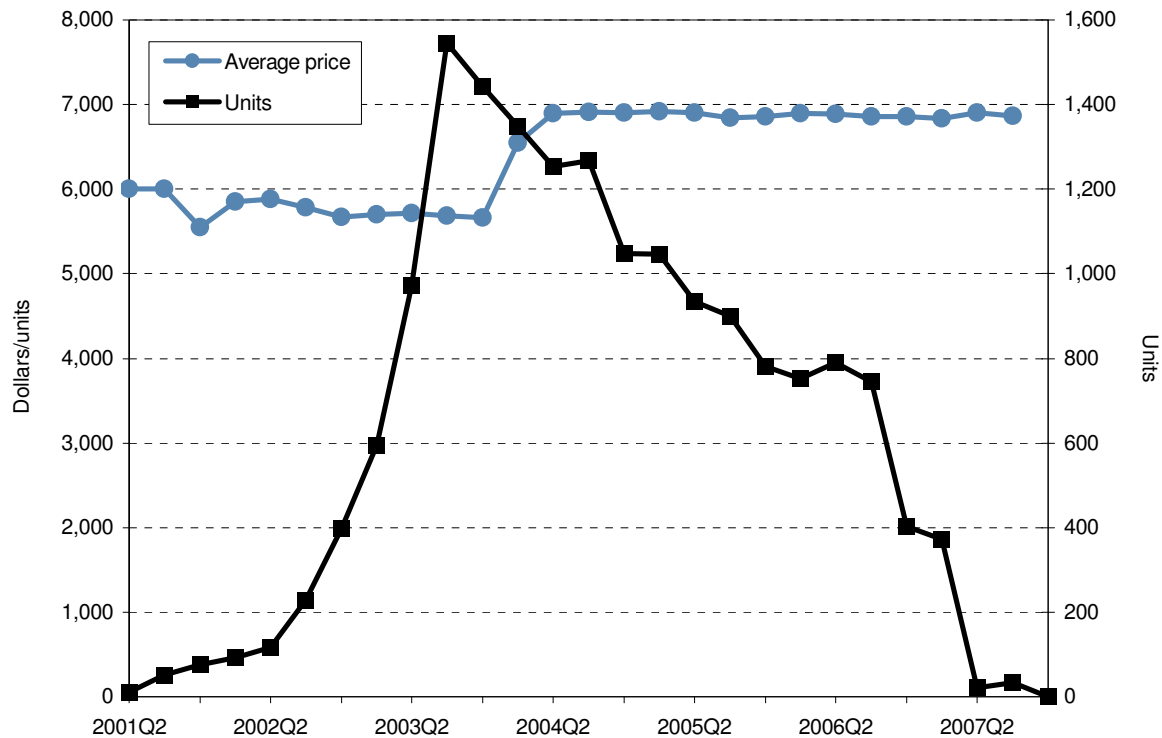
<sup>302</sup> In a December 2001 Executive Summary of the relationship between Eaton and International (see EATON-00438079, p. 1), Eaton explains that: "Arvin/Meritor has shifted their focus from OEM corporate level to pull through strategy. They have been offering incentives from \$750 to \$1,450 to leasing companies and end use customers and stepped up the entertainment of dealers and national and region sales personnel. This strategy began in July and we are seeing the impact in October. International indicates that this strategy is being used to keep their plant running and that they are desperate. International and Eaton have jointly developed a strategy to combat the Meritor strategy."

<sup>303</sup> See EATON-00640757. In this document Eaton states that "Eaton has raised its heavy-duty transmission market share in North America from 7X% to 81%—preventing our leading competitor from establishing enough market mass to compete with Eaton on a level playing field."

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not have been possible to increase its sales of the FreedomLine much beyond this volume, and the joint venture was dissolved in December 2003.

**Figure 18: FreedomLine total sales volume and average price.**

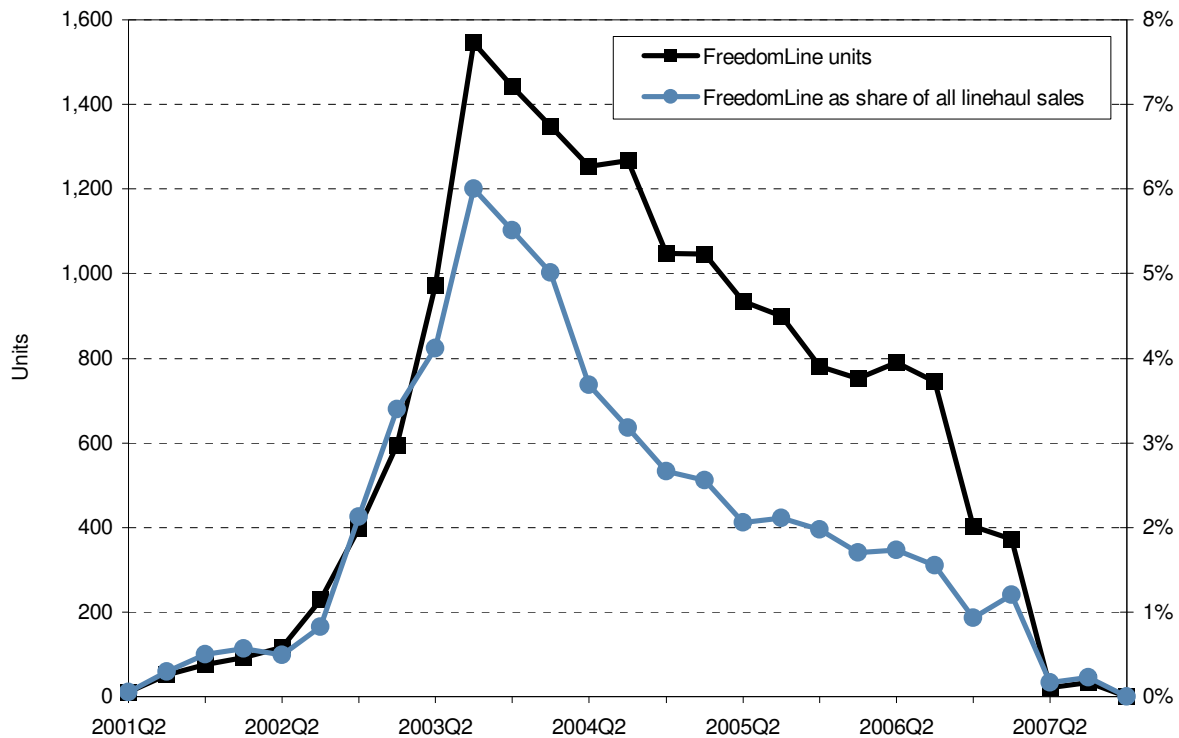


- (204) After the dissolution of the joint venture, Meritor continued to import the FreedomLine transmission from Europe, and the OEMs sold it to a limited number of end customers with strong preferences and a relatively high willingness to pay for this transmission. As a consequence of the higher cost to Meritor of obtaining the FreedomLine from Europe and the fact that ZFM was forced to abandon its plans to industrialize production of the FreedomLine in the U.S., Meritor was relegated to selling the FreedomLine to a “niche” segment of the market with its resulting significant price increase in February 2004. The demise of ZFM’s plans to industrialize production in the U.S. due to the limits Eaton’s LTAs imposed on its inability to reach adequate scale, and the resulting increase in the price of the FreedomLine, led to a steady decline of FreedomLine sales after the third quarter of 2003.
- (205) As with ZFM’s manual transmissions, I have analyzed contemporaneous macroeconomic factors that were out of Eaton’s control and may have contributed to the low sales volumes achieved by the FreedomLine, notwithstanding its superior technology and favorable market reception. Figure 19 shows both the volume of FreedomLine sales and its share of total

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linehaul units. As can be seen, the FreedomLine share falls faster than its sales volume,<sup>304</sup> which shows that the fall in overall demand for heavy duty transmissions cannot explain the fall in ZFM sales volume. This is particularly clear in comparing Figure 19 with Figure 16, which shows the total number of heavy duty trucks built in North America as being stable in 2002 and 2003 and recovering significantly in 2004 and 2005, a period of sharp decline in the FreedomLine's sales and share.

**Figure 19 FreedomLine unit sales and as a share of the linehaul market**



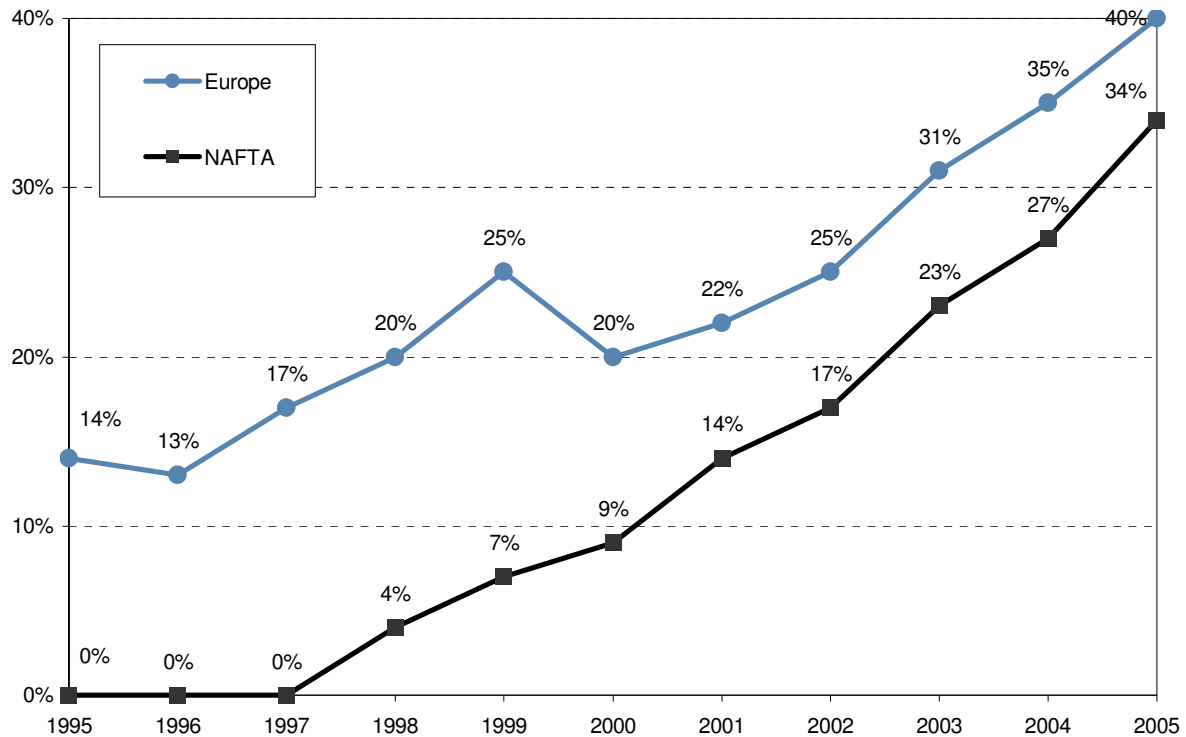
- (206) As the evidence discussed in Section 7.2, above, shows the FreedomLine was a technologically innovative product that was very well received by the OEMs and their end customers. Furthermore, a number of factors implied that the demand for automated manual transmissions in North America was reasonably expected to grow significantly after the launch of the FreedomLine. These factors included the superior fuel efficiency of automated manual transmissions (particularly important in a period of rising fuel costs) and a scarcity of trained drivers due to low levels of unemployment. As shown in Figure 20, the expectation of significant growth of automated manual transmissions in North America was shared by

<sup>304</sup> With respect to its peak in the third quarter of 1999 the share of the FreedomLine is halved in six quarters, while its sales volume is halved in ten quarters with respect to the same peak.

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Eaton. The market potential of automated manual transmissions is also confirmed by the significant penetration that these transmissions have achieved in Europe and elsewhere, as demonstrated by ZF reaching the milestone of selling the 250,000<sup>th</sup> unit of its automated manual transmission – almost all of which were sold outside the U.S.<sup>305</sup>

**Figure 20: Eaton's forecast of the growth of automated manual transmissions in NAFTA and Europe**



Source: Eaton's document with the title Roadranger EBEA Section 3 Customer and Market Focus.

- (207) Given the substantial market potential of the FreedomLine and the absence of any macroeconomic explanation for its decline, I conclude that the cause of its decline is the exclusionary conduct by Eaton discussed in Section 8 that foreclosed ZFM from a sufficiently large share of the market such that ZFM was denied the ability to reach sufficient scale to allow it to manufacture the FreedomLine in North America and was ultimately forced to exit the market. This conclusion is also supported directly by the extensive documentary evidence discussed above.

<sup>305</sup> See [http://www.zf.com/corporate/en/press/press\\_releases/products\\_press/products\\_detail\\_696807.jsp](http://www.zf.com/corporate/en/press/press_releases/products_press/products_detail_696807.jsp)

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### **9.2.5. Quality and warranty issues related to ZFM transmissions do not explain ZFM's decline in market share**

- (208) I have also examined both the data and documents to determine whether there is evidence to suggest that poor product quality or performance led to the decline in ZFM's share during the period at issue. From the documentary evidence, it is clear that the quality of ZFM's transmissions was at least as good as, and often significantly better than, that of comparable Eaton transmissions. Since HD Transmissions are durable goods used in demanding applications, it is reasonable to expect buyers of these transmissions to experience a certain number of break-downs requiring either repairs or replacement over the period of their useful life. Thus, demand by end customers for a manufacturer's transmissions will depend, among other factors, on their perceptions of the quality of its transmissions relative to other manufacturers' transmissions. OEMs will also be informed as to quality differences among different transmission manufacturers based on their observation of warranty claims filed by their end customers.
- (209) The data and documentary evidence clearly shows that ZFM's FreedomLine automated manual transmissions were generally perceived by the OEMs and customers as being technologically superior and more reliable than Eaton's AutoShift or its UltraShift transmission, and thus quality differences cannot explain the decline in market share of the FreedomLine. Eaton's Autoshift was particularly prone to quality problems: with 10,703 total claims for the 2000 model year, fully 90% of the AutoShifts built in 2000 had claims, and 52% of the Autoshifts comprised 82% of the total number of claims.<sup>306</sup>
- (210) Similarly, quality differences between ZFM's manual linehaul transmissions (its "G-Platform") and Eaton's manual linehaul transmissions do not explain the decline in ZFM's market share. Indeed, the fact that Meritor steadily increased its share of the linehaul market over the period from its entry into the market in 1989 through 1999, immediately prior to the formation of the ZFM joint-venture, indicates that the quality of Meritor's manual transmissions was likely at least comparable to Eaton's manual transmissions. During the period at issue, despite their exclusionary contracts with Eaton, the OEMs continued to give ZFM strong reviews for the quality of its products: in FY 2002, ZFM received Freightliner's "Masters of Quality Award" (according to ZFM, "no Eaton facility received the award") and the highest score in Volvo/Mack's supplier quality rating.<sup>307</sup>
- (211) Beginning in approximately January 2000 until approximately mid-2002, ZFM did experience significant warranty claims for its G-Platform transmissions, which were first

<sup>306</sup> EATON-00713075.

<sup>307</sup> See ZF Meritor Business Review dated February 13, 2002.



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introduced into the market during this period as a replacement to ZFM's prior "F-Platform" manual transmissions. These warranty claims were related to customer problems with the top-cover, the air filter regulator, and the range piston for this transmission, although the top-cover appears to be the issue that resulted in the greatest dollar value of warranty claims.<sup>308</sup> I do not consider these warranty claims to be a significant factor in explaining ZFM's declining market shares and ultimate foreclosure from the markets at issue, for the following reasons. First, by mid-2002, the problems with ZFM's G-Platform transmissions had been fixed, as is clear from the data on ZFM's warranty accruals,<sup>309</sup> while ZFM's manual transmission sales shares declined considerably *after* the warranty problems were resolved. In fact, ZFM's manual transmission sales shares declined considerably in the period immediately preceding the warranty problems, and they remained relatively flat during the period of the warranty problems—indicating that while these warranty problems may have negatively affected ZFM's profitability during this period, they did not have any significant impact on its market shares. Second, Meritor had experienced a far more significant warranty problem with its earlier F-Platform manual transmission in approximately 1992, one that required Meritor to perform a recall campaign in order to correct. While that previous more serious quality problem did coincide with a decline in Meritor's market shares, it did not result in lasting harm to the reputation of Meritor's products, as evident by the subsequent increase in Meritor's market shares through the remainder of the 1990s and its subsequent ability to obtain "standard/preferred" position with Freightliner (until Freightliner's 1999 and 2000 LTAs with Eaton). Third, any effect on ZFM of its warranty issues with the G-Platform in 2000–2002 would have no effect on its FreedomLine transmission and thus cannot be an explanation for ZFM's inability to sell sufficient quantities of the FreedomLine to OEMs in order to achieve adequate scale economies and ultimately remain in the market.

### **9.3. Documentary evidence and conclusions regarding impact of Eaton's LTAs on ZFM**

- (212) Having considered all of the various factors discussed above, both the econometric evidence of the impact of Eaton's LTAs on ZFM and the lack of alternative explanations for ZFM's decline in market share during Eaton's "OEM partnership" period, it is also important to consider the extensive documentary evidence discussed above. The documentary evidence on this point clearly shows that Eaton and the OEMs recognized that the effect of the LTAs was to reduce ZFM's market share, foreclose ZFM from the market, prevent ZFM (or other potential competitors) from re-entering the market, and maintain Eaton's monopoly position in the relevant markets. As noted by Eaton:

<sup>308</sup> See ZFMA0371244.

<sup>309</sup> See ZFMA0371244.

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- “Share at Freightliner has risen dramatically as LTA benefits influence fleet negotiations.”<sup>310</sup>
- “ARM has been losing market share in the transmission segment: Eaton has advantage because of LTAs; few LTAs on ARM’s side.”<sup>311</sup>
- “We must carefully weigh our actions, one competitor has been contained because of our actions with LTAs and an aggressive field force.”<sup>312</sup>
- In assessing the future of ArvinMeritor’s transmission business, Eaton states, “Strength of TCO LTAs is a strong deterrent.”<sup>313</sup>
- “We have effectively defended the HD ‘front gate.’”<sup>314</sup>
- ZF has limited growth potential in NAFTA, since “Eaton LTAs + Roadranger Field Marketing make HD growth difficult.”<sup>315</sup>
- “These negotiations resulted in long term agreements with 75% of the North American Market for the next 5 to 7 years. These agreements will increase our market share...”<sup>316</sup>
- “NAFTA Heavy Duty transmission share growth will come at Frtl [Freightliner] and International with LTAs.”<sup>317</sup>
- “We will grow share and sales even in a flat market - 3-4% 2002 sales growth. Growth secured with: Our Long-Term Agreement (LTA) position with leading NAFTA OEMs.”<sup>318</sup>
- Discussing the value of extending the LTA with Freightliner, “Benefits to Eaton: Guarantees high share levels.”<sup>319</sup>
- “HD shares above plan with actions ongoing to exceed plan thru leverage of competitive info and LTA’s.”<sup>320</sup>

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<sup>310</sup> Eaton-00011487 email (9/26/03)

<sup>311</sup> Eaton-01425304 at p.6 (11/22/04)

<sup>312</sup> Eaton-0001368182

<sup>313</sup> EAT0000105003

<sup>314</sup> Eaton-00220383-422.

<sup>315</sup> EATON-00220419.

<sup>316</sup> Eaton-00382154

<sup>317</sup> Eaton-00687295-314, at 301.

<sup>318</sup> Eaton-01163156-189, at 178.

<sup>319</sup> Eaton-00010558-562, at 560.

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- In assessing the potential extension of its LTA with PACCAR, Eaton identifies one of its objectives with the LTA as “long term competitive stability.”<sup>321</sup>
- Eaton’s market assessment shows Meritor and ZF as being blocked from the NAFTA market,<sup>322</sup> with its potential strategy to reach the market being, “Partnering with OEM’s - Long Term Agreements.”<sup>323</sup>

- (213) The documents show that the OEMs also recognized that their LTAs with Eaton “marginalized” ZFM and ultimate would foreclose ZFM from the market. For example, Volvo/Mack stated, “Eaton has established long term supply agreements (LTA) with explicit penetration thresholds for Eaton transmission, normally 90%... The above has led to [sic] that Eaton’s only North American competitor, Meritor, has gradually been marginalized to its current market position with a 10% market share.”<sup>324</sup> Perhaps most succinctly, Volvo/Mack stated, “We just killed ArvinMeritor transmission business with this contract [the LTA with Eaton].”<sup>325</sup>
- (214) Thus, considering all of the above factors, I conclude that Eaton’s LTAs—including both their specific terms and the means by which they were enforced during the period at issue—caused ZFM to lose significant sales and market share beginning in at least 2000 (if not earlier), deprived ZFM of the opportunity to compete for a sufficient share of the market to allow it to remain in the market, and ultimately eliminated ZFM as a competitive threat to Eaton’s monopoly in both the linehaul and performance transmission markets.

## 10. Eaton’s conduct harmed competition and consumers

- (215) Having established that Eaton’s LTAs and the means by which they were enforced by the OEMs were a material cause of the decline in ZFM’s sales and market share, and its ultimate exit from the market, I now turn to whether the conduct by Eaton was anticompetitive and harmed consumers. I conclude that Eaton’s LTAs with each of the OEMs—increasingly after July 2000, but also extending back to at least 1997—have caused and continue to cause harm to consumers and harm to competition in the markets for heavy-duty linehaul and performance transmissions. I also conclude that Eaton’s conduct allowed it to maintain its monopoly in the markets for heavy-duty linehaul and performance transmissions.

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<sup>320</sup> Eaton-00202948–956, at 948.

<sup>321</sup> Eaton-00260656–683, at 659.

<sup>322</sup> Eaton-00688920–982, at 935.

<sup>323</sup> EATON-00688935

<sup>324</sup> VM\_042155-218, at 159.

<sup>325</sup> VM2\_00070540–41.

- (216) The harm to consumers and harm to competition caused by Eaton's LTAs with the OEMs is evident in a number of dimensions:
- Eaton's LTAs with every heavy-duty truck OEM—the only distribution channel for manufacturers of HD Transmissions—successfully eliminated from the market the only significant competitor in HD Transmissions for linehaul applications, and the only significant potential competitor in performance applications.
  - Eaton's LTAs with every heavy-duty truck OEM have created insurmountable barriers to entry to any future new entrant.
  - Eaton's LTAs with the OEMs delayed and ultimately eliminated from the market a technologically innovative product, ZFM's automated manual FreedomLine transmission, thereby depriving end customers of important benefits from this new product.
  - Eaton used its LTAs in order to raise its rival's costs by limiting ZFM to an unsustainably small share of the market, preventing ZFM from industrializing production in the U.S., depriving ZFM of the most efficient channels of distribution, and increasing ZFM's costs to circumvent Eaton's anticompetitive conduct.
  - Eaton's LTAs with the OEMs caused harm to consumers by the OEMs' elimination of competing transmissions from their "data books," thereby preventing ZFM from gaining access to the most efficient means of distribution for the relevant products, depriving customers of the knowledge of the existence of competitive alternatives, and increasing inefficiencies for the OEMs, dealers, and end customers in "specing" and ordering trucks with ZFM transmissions as unlisted options.
  - Eaton's LTAs with the OEMs were price-fixing agreements in that they were effectively agreements to raise the prices of competing transmissions via the OEMs' resulting imposition of various "upcharges" and other price penalties on competing transmissions.
  - Eaton's LTAs with the OEMs caused further harm to consumers by their refusals to deal with competing transmission manufacturers whose products consumers valued, their refusals to provide price quotes for trucks equipped with competing transmissions, their reduction of their customers' warranties for trucks equipped with competing transmissions, their reduction in the truck "residual values" quoted to customers who wanted competing transmissions, and other similar actions.
  - Eaton's LTAs with the OEMs reduced price competition by eliminating Eaton's only competitor in the relevant market, increasing transmission prices paid by OEMs over the

long-run and increasing the prices paid by the OEMs' end customers for transmissions incorporated into the OEMs' trucks.

- Eaton's LTAs with the OEMs reduced price competition directed toward end customers by reducing "pull-through" incentives—competitive equalization payments, CE, and SPIFFs—paid to the OEMs' end customers, thereby not only harming end customers but also eliminating one of the means by which rival transmission manufacturers were attempting to compete for access to the market.
- Eaton's LTAs caused harm to competition by restricting output, both with respect to the more limited production of HD Transmissions during periods in which Eaton experienced capacity constraints and with respect to their effectiveness in suppressing the demand for trucks with ZFM's innovative FreedomLine transmission.
- In the case of the horizontal price-fixing agreement between Eaton and Volvo/Mack with regard to their competing transmission products, the harm to competition is self-evident, consistent with the *per se* prohibitions against such conduct and the criminal sanctions often imposed by the Courts, as the entire purpose of a price-fixing agreement is to increase prices paid by consumers and limit competition.

- (217) While I address each of these issues in more detail below, I first provide a review of the economic literature relevant to assessing whether Eaton's LTAs resulted in harm to competition. This literature is helpful in assessing whether Eaton's foreclosure of ZFM from the market was anticompetitive and in assessing the merits, or lack thereof, of Eaton's contention in this case that its conduct was simply active price competition that resulted in lower prices.

### **10.1. Economic literature relevant to assessing the anticompetitive effects of Eaton's LTAs**

- (218) In assessing whether Eaton's LTAs with the OEMs resulted in harm to competition, I have considered the facts of this case within the context of the extensive economic literature on the potential anticompetitive effects of vertical restraints. This literature provides insights into the circumstances in which one would expect exclusionary conduct or efforts to raise rivals' costs to have anticompetitive effects. In this context, it is clear that the conduct at issue predictably had an anticompetitive effect. The conduct at issue in this case has elements of exclusive dealing, which is normally categorized as a vertical restraint and analyzed under a "rule of reason" standard, and horizontal price constraints, which is considered to be *per se* illegal because of the harm to competition that is likely to result in such cases.

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- (219) As discussed above, Eaton's shares of the relevant markets both before and after ZFM's and Meritor's exit clearly establish a "rebuttable presumption" that Eaton has monopoly power throughout the period at issue in this case. As discussed further below, after the exit of ZFM as a competitor to Eaton, there is also evidence of price increases to OEMs—when contractually allowed under the terms of the LTAs—and a reduction in promotional payments paid to the OEMs' end customers (competitive equalization payments, CE, and SPIFFs), which effectively increased the prices paid by end customers. These are also indicative of the exercise of market power.
- (220) Having established that Eaton has monopoly power in the relevant market, the next step is to analyze whether the conduct at issue had an anticompetitive effect on the relevant market, in the sense of harming either consumers or the competitive process more generally. It is by now well established in the economics literature that exclusive dealing and other exclusionary conduct can both harm consumers and result in inefficient outcomes, despite some earlier arguments to the contrary.<sup>326</sup> While certain theoretical models have been used to show that exclusive dealing can be either efficient or competitively neutral, the assumptions underlying these models are special and are often violated in real world applications.<sup>327</sup> Some examples of the economics literature addressing the anticompetitive effects of exclusive dealing include papers by Bernheim and Whinston; Segal and Whinston; and Rasmusen, Ramseyer, and Wiley.<sup>328</sup> In particular, the characteristics of the relevant markets and the facts in this case match many of the situations that these economists identify in which exclusive dealing can generate anticompetitive effects.
- (221) One method for creating *de facto* exclusive dealing arrangements is to offer so-called "loyalty discounts" to distributors.<sup>329</sup> As is the case for the LTAs at issue in this proceeding, many loyalty discounts involve a rebate of a percentage of the price paid for all of the units that a distributor purchases, if that distributor achieves a target market share for its purchases. The arrangement can create strong incentives for a distributor to make purchases up to the target share and can prevent an equally efficient rival—though one that is smaller or perhaps one with a more narrow product line—from being able to compete.<sup>330</sup> If the share of the

<sup>326</sup> For "Chicago School" commentary, see Robert H. Bork, *The Antitrust Paradox*. New York: Free Press (1978), and Richard A. Posner, *Antitrust Law: An Economic Perspective*. Chicago: University of Chicago Press (1976).

<sup>327</sup> For example, see Michael D. Whinston, *Lectures on Antitrust Economics* The MIT Press. (2006). Page 140 and Joseph Farrell, "Deconstructing Chicago on Exclusive Dealing," mimeo (2005).

<sup>328</sup> D. Douglas Bernheim and Michael D. Whinston, "Exclusive Dealing," *Journal of Political Economy* 106, no. 1. (1998): 64–103. Ilya R. Segal and Michael D. Whinston, "Exclusive contracts and protection of investments," *RAND Journal of Economics* 31, no. 4. (2000): 603–633. Segal I. and Whinston M.D., "Naked Exclusion: Comment," *The American Economic Review* 90, no. 1. (2000): 296–309. Eric B. Rasmusen, J. Mark Ramseyer, and John S. Wiley, Jr., "Naked Exclusion," *The American Economic Review*, 81, no. 5. (1991): 1137–1145.

<sup>329</sup> Patrick Greenlee, David Reitman, and David S. Sibley, "An antitrust analysis of bundled loyalty discounts," *International Journal of Industrial Organization* 26, no. 5. (2008): 1132–1152.

<sup>330</sup> The fact that in the case at hand Eaton did not consider the rebates paid pursuant the LTAs simply a price reduction to

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distributor's sales required by the manufacturer is large enough, the manufacturer is effectively paying the distributor for exclusivity with respect to that individual distributor. If a manufacturer enters into such arrangements with a sufficiently large number of distributors accounting for a sufficiently large share of the market such that it is able to deprive its competitors of the ability to compete in the market, the manufacturer's payments to the distributors are effectively payments for a monopoly, i.e., exclusivity with respect to the entire product market at issue.

- (222) Thus, one of the most significant issues to address in assessing whether such "payments for exclusivity" represent a form of price competition or anticompetitive restraints of trade is the portion of the market foreclosed. While there is no "bright line" test, and harm to competition may occur when even a relatively small portion of a market is foreclosed, the severity of the harm to competition generally increases as a larger share of the market is foreclosed. In the limit, if exclusionary agreements cover 100 percent of the market, a monopolist's ability to foreclose competition is self-evident. However, a monopolist can also use exclusionary agreements to cover a sufficiently extensive share of the market—and cover a sufficient share of the most efficient distribution channels in a market—such that the monopolist is able to deny competing firms sufficient scale to remain competitive.<sup>331</sup> In this case, Eaton's exclusionary agreements with all four of the heavy-duty truck OEMs—the only significant manufacturers of heavy-duty trucks in the relevant geographic markets at issue in this case—foreclosed nearly 100 percent of the North American market or markets for HD Transmissions. Without a viable other means of reaching its customers, ZFM was forced to exit the market.
- (223) Another important factor in assessing whether payments for exclusivity are a form of price competition or are anticompetitive restraints of trade is their duration. Exclusive contracts with a longer duration make it significantly more difficult for an actual or potential competitor to attempt to win the business of the buyers from which it is foreclosed. Furthermore, when the dominant firm has signed up more than one buyer to exclusive contracts, these contracts are more likely to have anticompetitive effects if their terms are staggered. In the case at hand, the LTAs between Eaton and the OEMs had long durations (five or more years) and staggered terms and thus had the effect of significantly restricting the share of the market for which another manufacturer of HD Transmissions could compete, even when the LTAs did expire.

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loyal customers is evidenced by the following statement (made in relation to a possible transmission LTA with GM): "there would have to be mutual value for Eaton to enter into any LTA and if it was only a price reduction opportunity, we would likely not be as interested." (EATON-00380864)

<sup>331</sup> The percentage of the market foreclosed is often cited as an important factor in analyzing the anticompetitive effects of exclusionary conduct. See e.g., U.S. Department of Justice, *Competition and Monopoly: Single-firm Conduct Under Section 2 of the Sherman Act* (2008), p. 132 (citing cases).



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- (224) Much of the economic literature on exclusionary conduct of the last couple of decades has been devoted to identifying the different conditions under which exclusive dealing arrangements can lead to harm to competition and consumers. In particular, a number of papers have pointed out that even when purchasers appear to willingly sign on to the arrangements, when there are a number of purchasers of the product at issue, exclusive dealing can have anticompetitive effects.<sup>332</sup> In particular, when anticompetitive exclusionary contracts are offered to buyers sequentially, buyers may agree to exclusivity because being the one buyer who does not sign on to an exclusive dealing arrangement may put the buyer in a worse situation than the anticompetitive effects of the exclusionary agreements. The sequential way in which Eaton approached each of the OEMs matches the circumstances described in these models.<sup>333</sup>
- (225) The economic literature also recognizes that when exclusive arrangements are agreed to by intermediate purchasers rather than end customers, anticompetitive effects can result.<sup>334</sup> In particular, an intermediate purchaser who can pass-on anticompetitive price increases to end customers may be more concerned with the price that it pays for the good relative to the prices paid by its rival intermediate producers than it does with the absolute price level. In such circumstances, an intermediate purchaser will be more disposed to agree to exclusive arrangements, despite their anticompetitive consequences, because of concerns that if it does not, it will be treated worse than its competitors.
- (226) The economic literature demonstrates that a dominant firm can increase or defend its monopoly power by using anticompetitive exclusion to raise its rivals' costs.<sup>335</sup> By limiting the scale of its rivals' production, the dominant firm's conduct does not allow the rivals to fully benefit from economies of scale and thus prevents them from becoming viable competitors. An implication of a "raising rivals' costs" effect in this case is that Eaton's exclusionary actions harmed competition and truck purchasers also during the period in which ZFM was still in the market. This is because Eaton's conduct did not allow ZFM to fully benefit from economies of scale and thus to become a more viable competitor. As discussed in Section 10.4 below, this was particularly true with regard to the industrialization of the FreedomLine that, absent Eaton's conduct, would have lowered the production cost and the price of this innovative technology in North America.

<sup>332</sup> For example, see D. Douglas Bernheim and Michael D. Whinston, "Exclusive Dealing," *Journal of Political Economy* 106, no. 1. (1998): 64–103. Also Michael D. Whinston, *Lectures on Antitrust Economics* The MIT Press. (2006) provides a review of this literature.

<sup>333</sup> See Michael D. Whinston, *Lectures on Antitrust Economics* The MIT Press. (2006), p. 146–147.

<sup>334</sup> D. Douglas Bernheim and Michael D. Whinston, "Exclusive Dealing," *Journal of Political Economy* 106, no. 1. (1998): 64–103.

<sup>335</sup> For a summary of this literature see Thomas Krattenmaker and Steven Salop, *Anticompetitive Exclusion: Raising Rivals' Costs to Achieve Power over Price*, 96 *Yale Law Journal* 209 (1986).

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- (227) As discussed in more detail below, particularly indicative of Eaton’s anticompetitive purpose is the fact that Eaton could have competed with ZFM by increasing the amount of SPIFFs paid directly to truck purchasers, but Eaton instead sought to reduce the direct incentives paid to truck purchasers and paid the OEMs through the LTAs to exclude ZFM from the market. If Eaton’s intent with its LTAs had really been to cut prices in order to encourage truck purchasers to choose an Eaton transmission over a ZFM transmission, then a much more direct method of doing so would have been to increase SPIFF payments to those truck purchasers—and the data clearly indicate that Eaton did not do so.
- (228) In assessing the harm to competition and consumers caused by the conduct, the economic literature recognizes that it is also important to assess whether there are any potentially significant procompetitive effects from the conduct, and if so, whether such potentially procompetitive effects are sufficient to outweigh the anticompetitive effects.<sup>336</sup> While in certain circumstances, exclusive contracts and rebates can have a procompetitive purpose and effect, I conclude that there are no such procompetitive justifications or procompetitive effects of the conduct by Eaton and the OEMs at issue in this case. Indeed, the vast majority of the evidence in this case unambiguously points to an overwhelming anticompetitive purpose and effect of the agreements at issue.
- (229) Common among the efficiency justifications are creating a dedicated and loyal sales force, avoiding “free-riding” on certain types of investments, and reducing transaction or other costs associated with maintaining more than one supplier. The facts of this case support none of the efficiency arguments offered by Eaton or any of the other efficiency justifications that are commonly offered for exclusive dealing arrangements. Indeed, the facts in this case strongly indicate that Eaton’s LTAs at issue—and the actions undertaken by the OEMs in furtherance of Eaton’s requirements—led to considerable inefficiencies, in addition to the broader harm to the competitive process and to ZFM that they caused.
- (230) The only potentially procompetitive justification offered for the conduct at issue in this case is that in dealing with its transmission suppliers, the OEMs may have been able to reduce their costs by dealing with only a single supplier of transmissions. I have reviewed the evidence for such an argument, and I conclude that it is unpersuasive from an economic perspective and simply a pretextual attempt to justify actions that were clearly anticompetitive in both purpose and effect. There is no evidence that engineering cost savings by the OEMs motivated their agreements with Eaton and Eaton’s ever-increasing market share requirements; there is substantial evidence that different end customers (fleets and truck operators) had strong preferences for transmissions from different manufacturers,

<sup>336</sup> A list of possible reasons for exclusive dealing, both procompetition and anticompetitive can be found in Philip Areeda and Louis Kaplow *Antitrust Analysis*, Aspen Publishers, Inc. (1997), pp. 770–773.

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just as they do for several other major components; and the agreements at issue were not sole-source contracts that would have eliminated (at least in the short-run) the OEMs' need to ensure that their trucks could accommodate more than one transmission.

- (231) Indeed, the evidence indicates quite the contrary: the efforts by Eaton and the OEMs to exclude ZFM transmissions from the data books led to inefficiencies whenever a customer or dealer wanted to “spec” a truck with such an unlisted transmission. Many of the efforts by the OEMs to convert customers from ZFM to Eaton transmissions, even *after* the OEMs had established the production order-board for a truck, also reflect the inefficiencies created by the LTAs. Likewise, the inefficiencies caused by the requirement that an OEM rely on a single supplier for the vast majority of its transmissions was evident to the OEMs themselves during the period in which Eaton experienced capacity shortages and the OEMs were unable to procure an adequate number of transmissions from Eaton in order to comply with the terms of their LTAs. In fact, a significant issue for several OEMs during this period is their desire but inability to secure a commitment from Eaton that they will obtain a preferred position from Eaton in terms of the transmissions that they are allocated, in the event of a capacity shortage. Given Eaton's LTAs with all of the OEMs, Eaton's LTAs could not possibly have been a means for the OEMs to ensure an adequate supply of transmissions, and indeed, they had the exact opposite effect. The remainder of this Section discusses the specific harm to competition caused by Eaton's LTAs with the OEMs.

## **10.2. Foreclosing ZFM from the market harmed competition and consumers**

- (232) As demonstrated above, Eaton's LTAs with all four OEMs successfully foreclosed ZFM from the markets for both linehaul and performance applications. ZFM was Eaton's only significant competitor in HD Transmissions for linehaul applications, and the only significant potential competitor in performance applications. While ZFM's primary focus was on selling linehaul transmissions, both with its manual and FreedomLine transmissions, ZFM had developed a transmission suitable for a large segment of the on-off highway performance market (its “10-L” or “11-D” transmission), and it had plans to eventually expand the use of its FreedomLine technology into applications other than linehaul (i.e., on-off highway applications). Eaton's LTAs not only foreclosed ZFM from the relevant market, but they also established insurmountable barriers to entry to any future new entrant. The documents discussed above are also particularly clear that the purpose of Eaton's LTAs—recognized by the OEMs—was to drive ZFM from the market.
- (233) By foreclosing ZFM from the market, Eaton deprived end customers of the opportunity to purchase trucks with competing HD Transmissions that they preferred either for their greater utility or the increased cost savings that they provided relative to Eaton's transmissions. I

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have reviewed statements provided by several end customers with fleets of various sizes, ranging from 20 to 5,000 trucks. It appears that all of these end customers had specified ZFM transmissions for some or all of their truck purchases before ZFM was excluded from the market, and they were satisfied with the performance, reliability, and the after-sales service support provided by ZFM. Several of these customers noted that they considered ZFM as providing “healthy competition in the market place” and allowing “checks and balances in the pricing side as well.”<sup>337</sup> All of these customers also expressed their intention to continue to specify ZFM HD Transmissions in their truck purchases, if these transmissions were still made available to them. Many expressed concerns about the effect on prices of excluding ZFM HD Transmissions from the market: without ZFM transmissions as an option, “class 8 manufacturers are unable to provide competitive component pricing.”<sup>338</sup> While I recognize that these customer statements were not provided as part of a random sampling process, nor have I computed the share of the relevant markets that they represent, their perspective is nonetheless consistent with what I would generally expect from end customers faced with the elimination of competing products from the relevant markets.

### **10.3. Eaton’s LTAs harmed competition and consumers by preventing customer access to technological innovation**

- (234) As demonstrated above, Eaton’s LTAs with the OEMs delayed and ultimately eliminated from the market a technologically innovative product, ZFM’s automated manual FreedomLine transmission. Actions undertaken by a monopolist—such as Eaton—to delay, prevent, or limit the introduction of a competing technology deprives end customers of the benefits of innovation and results in harm to consumers and harm to competition. As discussed above, the benefits to customers from the FreedomLine technology included increased fuel economy, reduced driver training costs, higher driver retention, and higher truck resale value—significant financial benefits that end customers were denied as a result of Eaton’s conduct.
- (235) The documents are replete with references from the OEMs regarding their and their customers’ interest in ZFM’s innovative FreedomLine transmission, as discussed in Section 7.2, above. This interest was particularly important given the fact that Eaton’s Ultrashift transmission was expected to be introduced several years after the planned introduction of the FreedomLine, and Eaton’s previous attempts to introduce automation—and ultimately its Autoshift as well—had suffered from significant quality problems. Indeed, the anticompetitive effect of Eaton’s LTAs in preventing or limiting the introduction of the

<sup>337</sup> See testament letter by William A. Gale, Vice President of Equipment Services for Universal Truckload Services, Inc. (“UTSI”).

<sup>338</sup> See testament letter by Paul Wade, Vice President of Phoenix Transportation Services, LLC.

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FreedomLine—particularly through the elimination of the FreedomLine from the data books—is expressed quite clearly by Freightliner:

- (236) “From a customer perspective, publishing this product [the FreedomLine] is probably the right thing to do and should have never been taken out of the book. It is a good product with considerable demand in the marketplace. Orders from Freightliner Trucks would certainly increase. However, for all the reasons you outline, it would not be the prudent thing to do. It would impact our Eaton deal and it’s unlikely to alter Meritor’s long term NAFTA strategy. My only fear is that a competitive OEM might see the value of making FreedomLine a proprietary product and could create a competitive advantage over FLLC.”<sup>339</sup>
- (237) The fact that Freightliner recognized that its truck orders “would certainly increase” if Freightliner had not been taken out of its data book is particularly compelling evidence of the anticompetitive effect of Eaton’s LTAs.

#### **10.4. Eaton’s LTAs served to raise its rival’s costs**

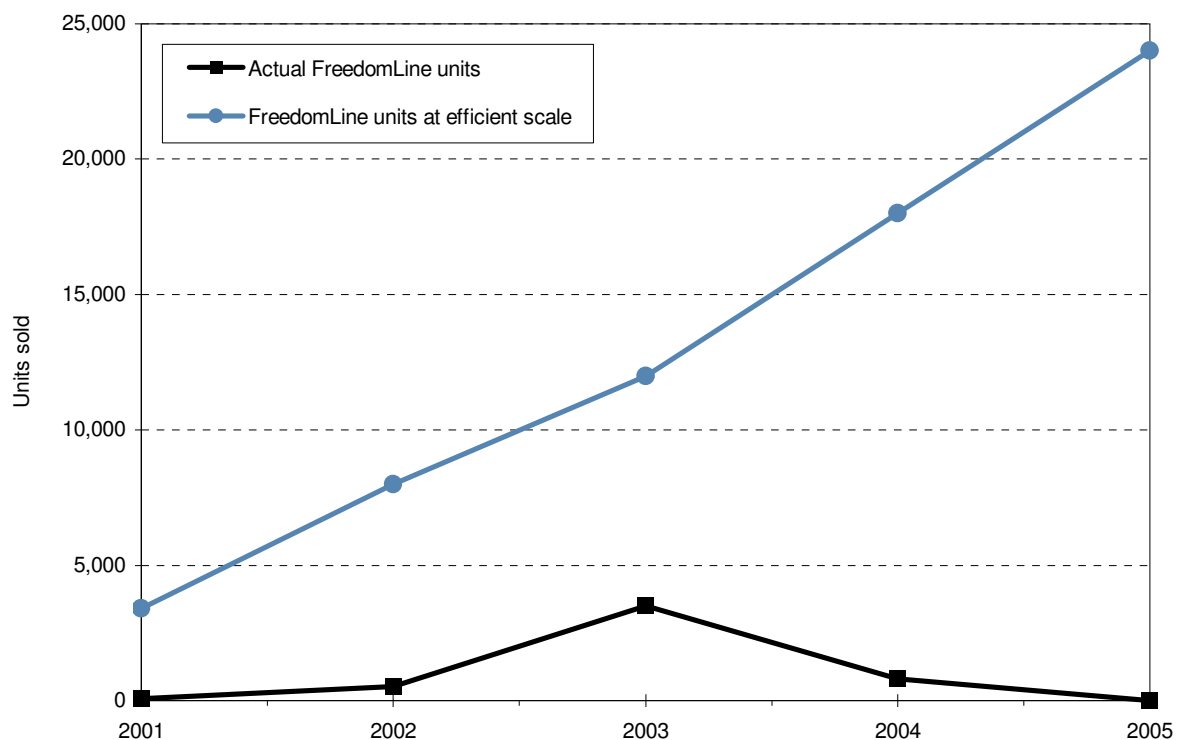
- (238) As discussed above, Eaton used its LTAs in order to raise its rival’s costs by limiting ZFM to an unsustainably small share of the market, preventing ZFM from industrializing production in North America, depriving ZFM of the most efficient channels of distribution, and increasing ZFM’s costs to circumvent Eaton’s anticompetitive conduct.
- (239) As Figure 21 shows, the volumes at which ZFM was planning to industrialize production of the FreedomLine in North America at an efficient scale of production were significantly higher than the actual productions volumes to which Eaton’s exclusionary conduct limited ZFM.<sup>340</sup>

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<sup>339</sup> ARMFTL006792-93.

<sup>340</sup> Expected volumes with industrialization are based on ZFM November 30, 2000 Revised Strategic Business Plan (ZFMA0357342, see Section 11 for a detailed discussion of this plan). Actual volumes are calculated using ZFM sales data. The years in the figure are fiscal years. Fiscal year 2004 includes only FreedomLine units sold in October to December 2003, since ZFM stopped selling the FreedomLine on its account in January 2004. After this date ZFM distributed the FreedomLine in North America on behalf of ZF but did not control its cost or pricing.

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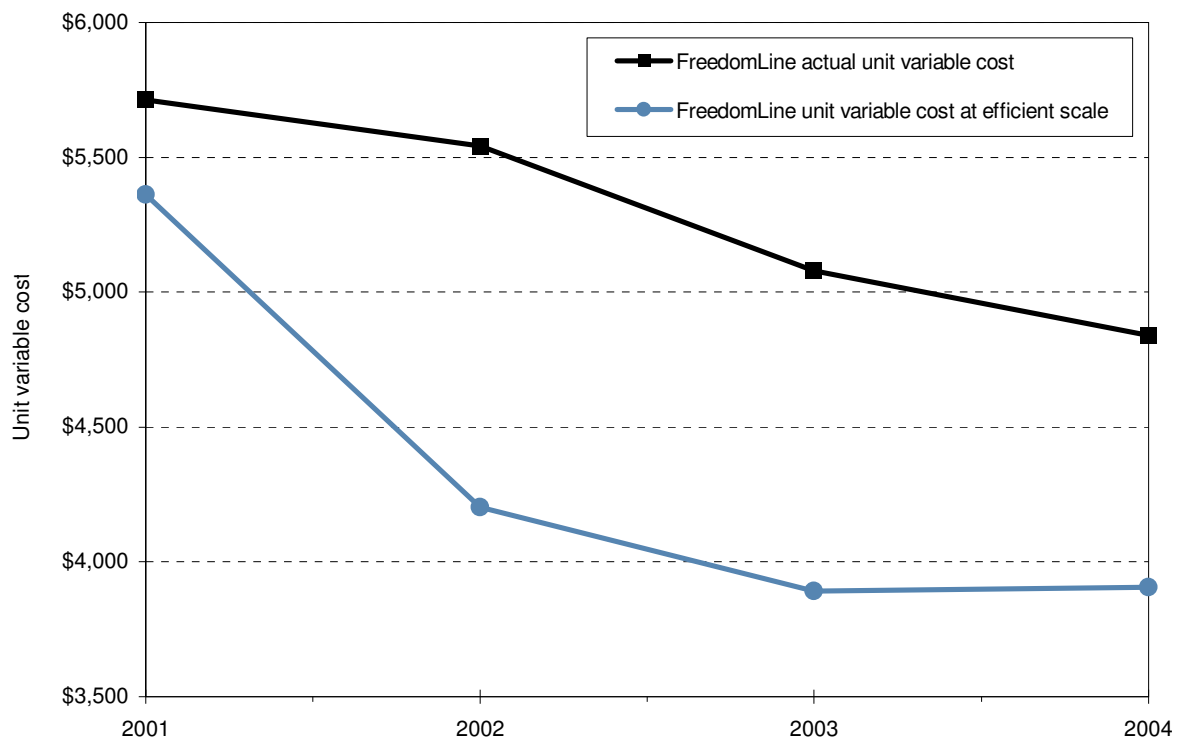
**Figure 21: Freedomline units—actual v. efficient scale**

Notes: Fiscal years (October to September). Sources: actual units from ZFM sales data; units at efficient scale from ZFM November 2000 Revised Strategic Business plan (ZFMA0357342).

- (240) The impact of Eaton's conduct on the unit variable cost of the FreedomLine can be seen in Figure 22. This figure compares the actual per unit variable cost of production of the FreedomLine over the period during which it was sold by ZFM to the per unit variable cost that ZFM would have been able to realize, if the production of the FreedomLine had been industrialized in North America at an efficient scale of production.<sup>341</sup> As can be seen, Eaton's conduct had the effect of preventing the unit variable cost of the FreedomLine to reach the low levels that would have been made possible by industrialization at an efficient scale and thus made it impossible for ZFM to lower the price of the FreedomLine further and to increase the competitive threat that it posed for Eaton.

<sup>341</sup> Expected unit variable costs at efficient scale are based on ZFM November 30, 2000 Revised Strategic Business Plan (ZFMA0357342, see Section 11 for a detailed discussion of this plan). Actual unit variable costs are calculated using ZFM sales data. Variable cost includes direct labor, materials, freight and variable burden. The variable part of the burden has been calculated using information provided by ZF Meritor.

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**Figure 22: FreedomLine unit variable cost—actual v. efficient scale**

Notes: Fiscal years (October to September). Sources: actual unit variable cost ZFM sales; unit variable cost at efficient scale from ZFM November 2000 Revised Strategic Business plan (ZFMA0357342).

- (241) Additional evidence that final production of the FreedomLine in North America at efficient scale would have enabled ZFM to take a number of engineering and logistical steps that would have led to a significant reduction in the unit cost of the FreedomLine is provided in a presentation prepared for the ZFM July 15, 2003 Board Meeting.<sup>342</sup> This document is subsequent to the November 2000 Revised SBP on which the forecasts of the unit cost of the FreedomLine presented in Figure 22 are based. The expectations about the production volumes and the industrialization schedule of the FreedomLine that it provides have thus already been negatively affected by Eaton's conduct. However, as these estimates of the reductions in unit costs made possible by certain engineering and logistical changes reflect ZFM's additional experience with the FreedomLine during this period, I would expect these estimates to be reliable.<sup>343</sup> This presentation shows similar significant cost reductions, with per unit costs falling from approximately \$4,900 to approximately \$3,900, if the volume of production had risen from approximately 4,000 units to at least 10,000 units.

<sup>342</sup> See ZFMA0066778 at 6799.

<sup>343</sup> The reductions in unit costs would have been made possible by, for example, lowering the cost of planetary components and other parts, sourcing gears from Brazil, and outsourcing machining.



### 10.5. Excluding ZFM transmissions from the data books harmed competition

- (242) The documentary evidence discussed above shows that Eaton's LTAs caused the OEMs to exclude ZFM transmissions from the data books. This exclusion of ZFM transmissions from the data books forecloses ZFM transmissions from the most efficient means of distribution, and indeed, prevents customers from being even aware that ZFM transmissions are available substitutes for Eaton's transmissions. Even if an OEM were to still allow a customer to order a ZFM transmission as an "unpublished option," this significantly increases the cost to the end customer, both as a result of the higher "multiple" applied by the OEM to the cost of the unpublished option and as a result of additional fees that the OEM may apply to a "non-partner" component. There is no meaningful efficiency justification for such a data book exclusion, particularly once the engineering costs to ensure compatibility of the transmission with the OEM's engines and other drivetrain components have been incurred. Indeed, the refusal to include ZFM transmissions as published options resulted in considerably inefficiencies by imposing additional transaction and administrative costs on the OEMs, dealers, and end customers in "specing" a truck with an unlisted option. The anticompetitive effect of the exclusion of ZFM transmissions from the OEMs' data books is particularly clear in that their exclusion was motivated by the OEMs' attempts to comply with the specific—and very high—market share provisions in Eaton's LTAs, the adverse financial consequences to the OEMs of failing to achieve Eaton's high market share requirements, and the extraordinary efforts the OEMs were required to undertake in order to achieve Eaton's high market share requirements.

### 10.6. Eaton's LTAs with the OEMs were price-fixing agreements

- (243) An important component of the anticompetitive conduct at issue in this case involves Eaton's explicit agreements with the OEMs with regard to the prices that the OEMs would charge their end-customers (truck purchasers) for competing *ZF Meritor* transmissions. Such agreements are not resale price agreements, as are sometimes imposed by a manufacturer on its distributors with respect to the manufacturer's *own* products; rather, such agreements between a manufacturer and its distributors with regard to the prices the distributors will charge for a *competing manufacturer's* products are price-fixing agreements, especially when imposed by a monopolist. (Below, I discuss in more detail Eaton's horizontal price-fixing agreement with Volvo/Mack in which they agreed on the prices at which they would sell their own directly competing products, in addition to their price-fixing agreement with respect to ZFM's transmissions.) Such price-fixing agreements clearly have the potential to significantly reduce competition between transmission manufacturers and, thus, harm end customers. As an analogy, consider the effect on competition (and the resulting antitrust enforcement action) if Coke were able to require a large supermarket chain—or more

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analogously, all supermarkets—to set the retail price of Pepsi one dollar higher than the retail price of Coke. The potential for competitive harm is particularly high because these agreements effectively fix the prices of horizontal competitors at the retail level.

- (244) Through Eaton’s agreements with the OEMs, Eaton effectively fixed the retail prices that the OEMs could charge end customers for ZFM transmissions. In some instances, as discussed in Section 8 above, the agreements between the OEMs and Eaton to increase the prices of ZFM transmissions were explicit. In other instances, in order to comply with the market share provisions of the LTsA, the OEMs raised the retail price charged for a ZFM transmission through various “upcharges” or non-partner penalties, making comparable ZFM’ transmissions more expensive than Eaton transmissions, regardless of how ZFM priced its transmissions to the OEMs relative to Eaton’s transmission prices. In all cases, these agreements led to an increase in the prices that end customers (fleets) had to pay OEMs for ZFM transmissions. The arrangements limited ZFM’s ability to increase sales by lowering its wholesale prices in the hope that the OEMs would pass through lower prices to truck purchasers. The result is that ZFM had limited ability to increase sales by lowering its prices to the OEMs, since a lower wholesale price to the OEM would have no effect on the relative retail prices paid by an OEM’s truck customer for a ZFM transmission relative to an Eaton transmission.

#### **10.7. Price penalties, worse warranty terms and lower residual values on trucks equipped with ZFM transmissions**

- (245) Another approach to assessing how the agreements between the OEMs and Eaton affected truck purchasers is to consider whether truck purchasers were primarily induced to purchase Eaton transmissions through lower pricing or other benefits associated with choosing Eaton transmissions, or whether they were induced to do so through practices that raised the cost of selecting ZFM transmissions or through practices that limited the transmission choices that the OEMs made available to the truck purchasers.
- (246) If Eaton had been able to increase its share of sales to OEMs by simply offering truck purchasers a lower price for Eaton transmissions or superior service and quality, then it would be more plausible that Eaton’s conduct was procompetitive and involved competition on the merits. On the contrary, as discussed extensively in Section 8, the evidence clearly shows that Eaton’s share requirements in the agreements with the OEMs were not achieved by offering lower prices to truck purchasers, but rather by using coercive and anticompetitive tactics that made ZFM transmissions unavailable or only available under onerous and costly conditions. In other words, Eaton’s agreements with the OEMs—and its enforcement of the

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specific terms in those agreements—induced the OEMs to take a broad range of punitive actions to discourage truck purchasers from requesting ZFM transmissions.

- (247) Besides allowing Eaton to exclude ZFM and to raise the net price paid by final truck purchasers for trucks with Eaton transmissions, these punitive actions directly harmed those end customers who had a preference for ZFM transmissions. The actions by Eaton and the OEMs forced those truck purchasers either to “spec” transmissions produced by a manufacturer that they valued less (*e.g.*, Eaton) or, if they nevertheless continued to “spec” ZFM transmissions, to do so on much worse terms, such as higher prices, higher ordering and transaction costs, and worse financing and warranty terms.
- (248) As discussed above, in the spring of 2002, Freightliner informed several fleets that ZFM transmissions would simply not be available on its trucks. In order to improve its ability to monitor the OEMs’ compliance with the anticompetitive actions that it induced them to take in meeting Eaton’s share requirements, Eaton required the OEMs to share their order books with Eaton and to identify fleets that had already ordered trucks with ZFM transmissions as targets for conversion to Eaton’s transmissions. In certain instances, the OEMs forced these fleets to rescind their orders for ZFM transmissions and to accept their least preferred transmissions, *i.e.*, Eaton’s transmissions.
- (249) Through its agreements with the OEMs, Eaton was able to induce the OEMs to delay introducing the FreedomLine as an option. In addition to the negative financial impact on the OEMs that sales of ZFM’s FreedomLine would have with respect to Eaton’s market share requirements, Eaton’s agreements with the OEMs also prevented the OEMs from advertising or engaging in other forms of promotional activities that would otherwise have been expected with a technologically innovative new product. This delay and lack of promotional activities by the OEMs led to the result that many customers who would have otherwise valued the advanced features of the FreedomLine automated manual transmissions were not able to obtain them as an option or were not made sufficiently aware of their features.
- (250) Furthermore, as described above in Section 8, Eaton coerced Freightliner and other OEMs into offering worse warranty and leasing terms to those truck purchasers that requested ZFM transmissions, in order to ensure the OEMs’ compliance with the penetration thresholds established in the LTAs. Specifically, without any apparent cost justification for imposing such punitive terms, in order to comply with Eaton’s market share requirements, Freightliner withdrew certain warranty terms for trucks with ZFM transmissions and quoted lower residual values on trucks with ZFM transmissions.<sup>344</sup> As discussed above, International

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<sup>344</sup> The OEMs offered leasing programs in which they committed to repurchase the trucks after a given number of years at a particular price called the residual value.

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agreed to exclude trucks with ZFM transmissions from its Diamond Spec warranty program. As these terms related to the cost and value of the *entire* truck and not just to the transmission, the OEM's changes to these terms imposed a large cost on the truck purchasers that desired to spec ZFM transmissions, especially relative to the value of the particular transmission.

#### **10.8. Eaton raised the prices that it charged to the OEMs**

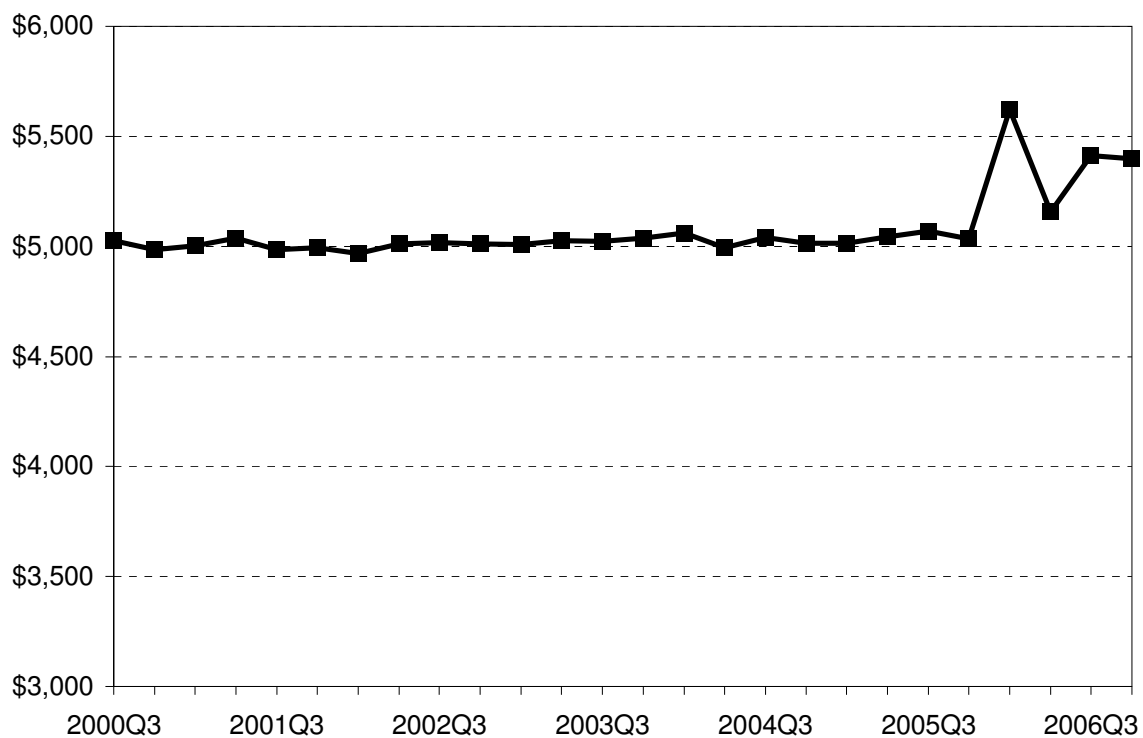
- (251) In 2005, when ZFM started considering and discussing with the OEMs the possibility that it would exit the market, Eaton significantly increased the prices that it charged Freightliner and International for two products that had previously competed with ZFM transmissions, namely the Autoshift and the Ultrashift. Figure 23 and Figure 24 show the average price of the Autoshift and Ultrashift at Freightliner, and Figure 25 and Figure 26 show the average price of the Autoshift and Ultrashift at International. As can be seen, the price of both transmissions at both OEMs increased by more than 10% in the third quarter of 2005 at International and in the first quarter of 2006 at Freightliner. The likelihood that Eaton would raise prices after ZFM's exit from the market was clear to the OEMs: "Unless ZF Meritor's market share at FTL stays above 20%, ArvinMeritor will exit the transmission business. This would leave Eaton as a monopoly and would make future cost increases past 2005 likely."<sup>345</sup>

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<sup>345</sup> See ETNFTL007122-24.

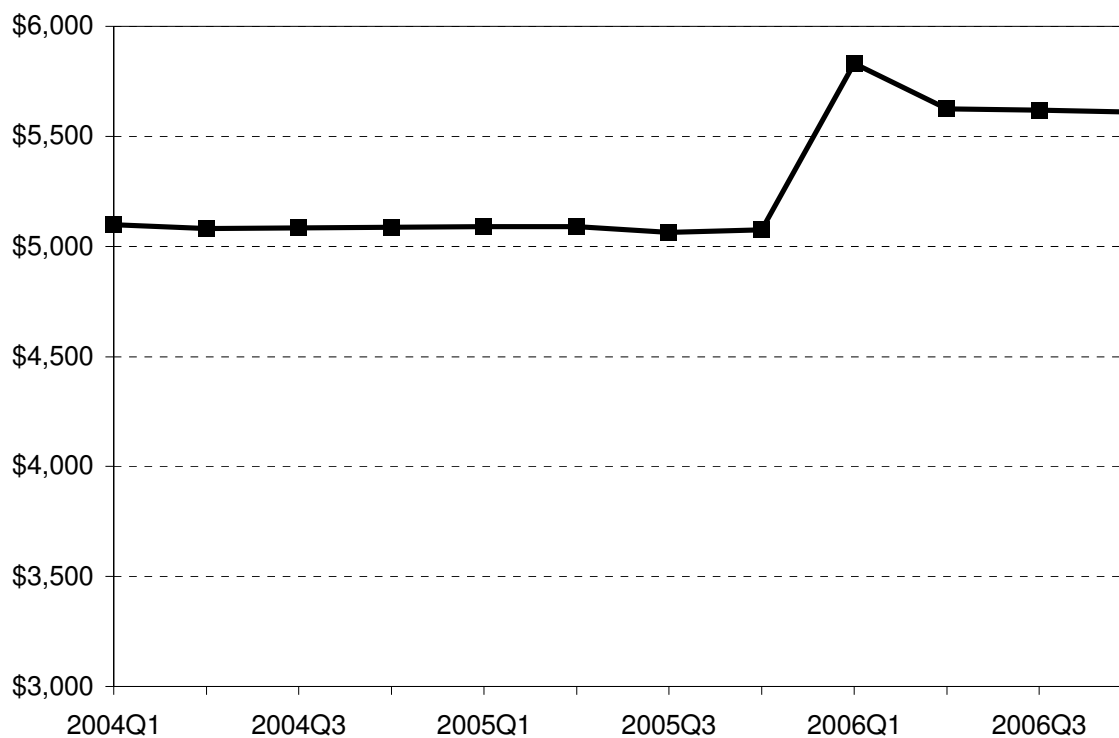
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**Figure 23 Average price of AutoShift at Freightliner**



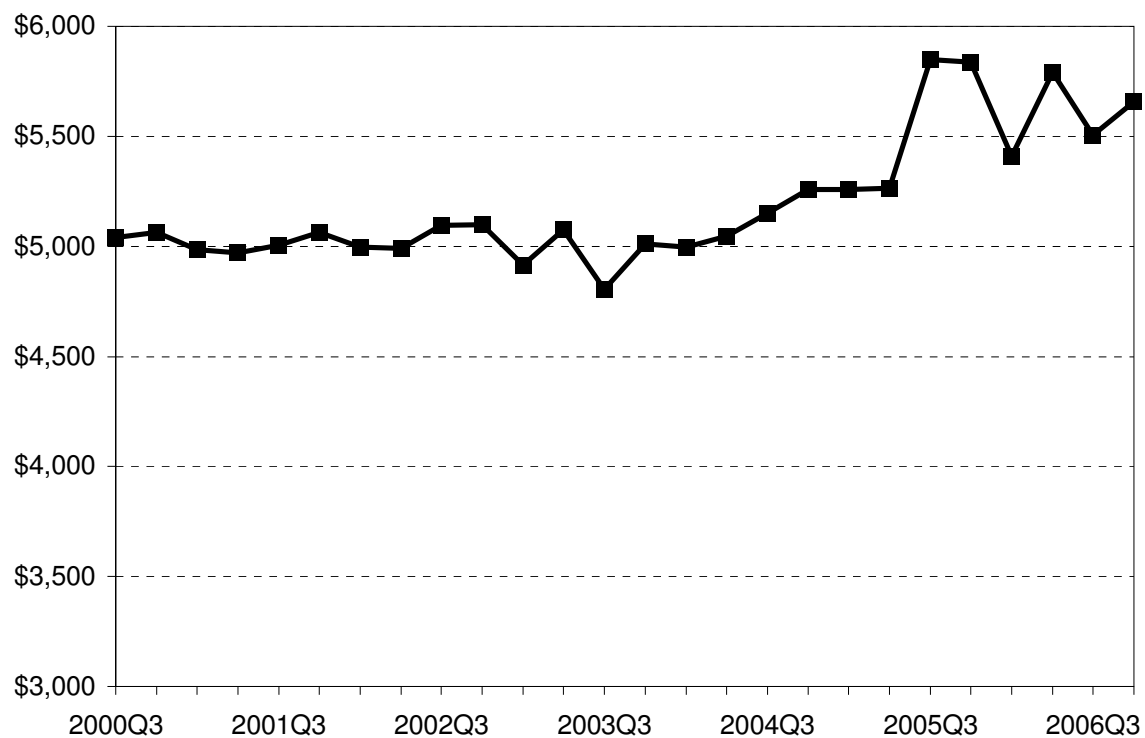
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**Figure 24 Average price of UltraShift at Freightliner**



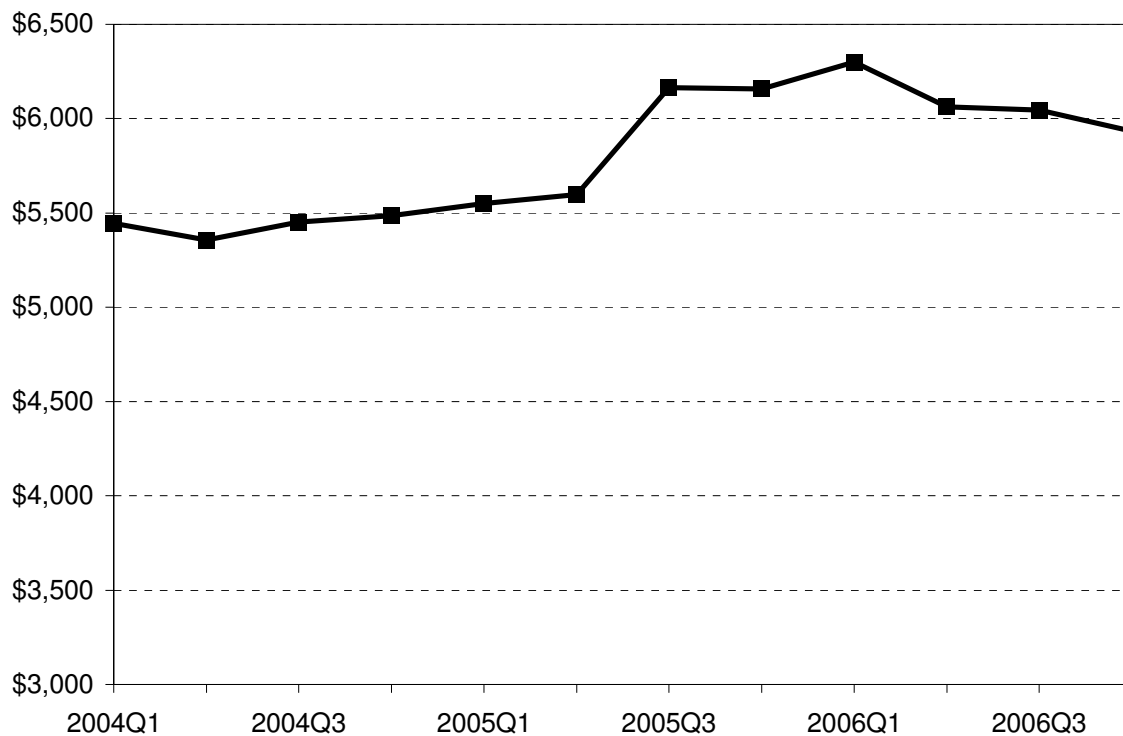
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**Figure 25 Average price of AutoShift at International**





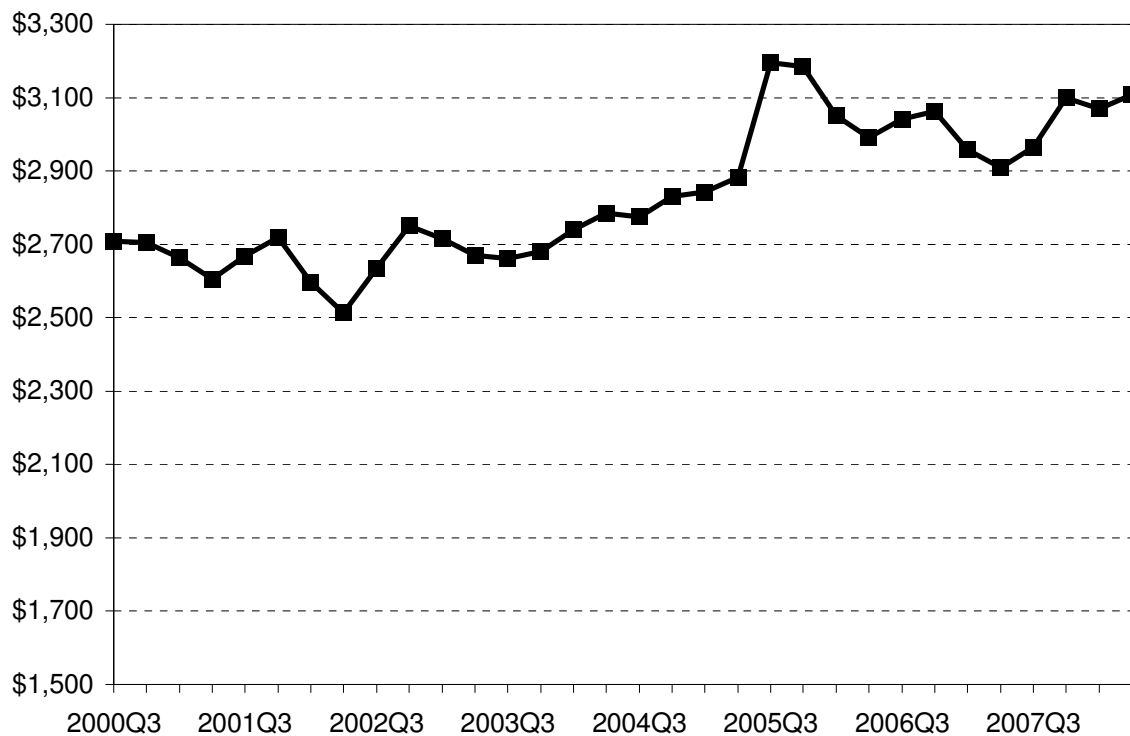
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**Figure 26: Average price of UltraShift at International**

- (252) Eaton found it more difficult to raise the prices of its linehaul manual transmissions during the 2001–2006 time period, because the prices of a large number of these transmissions were fixed contractually in its LTAs with most of the OEMs. At Freightliner, for example, the average price of Eaton linehaul manual transmissions remained relatively constant between 2001 and 2006. Eaton, however, did raise the prices of manual linehaul transmissions during this time period at the only OEM, International, at which it was contractually allowed to do so. Figure 27 shows that the average price of Eaton manual linehaul transmissions at International increased from approximately \$2,700 in the fourth quarter of 2003 to approximately \$3,200 in the third quarter of 2005, a 19% increase in less than two years.

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**Figure 27: Average price of Eaton linehaul manual transmissions at International**



### 10.9. Eaton reduced SPIFF payments to end customers

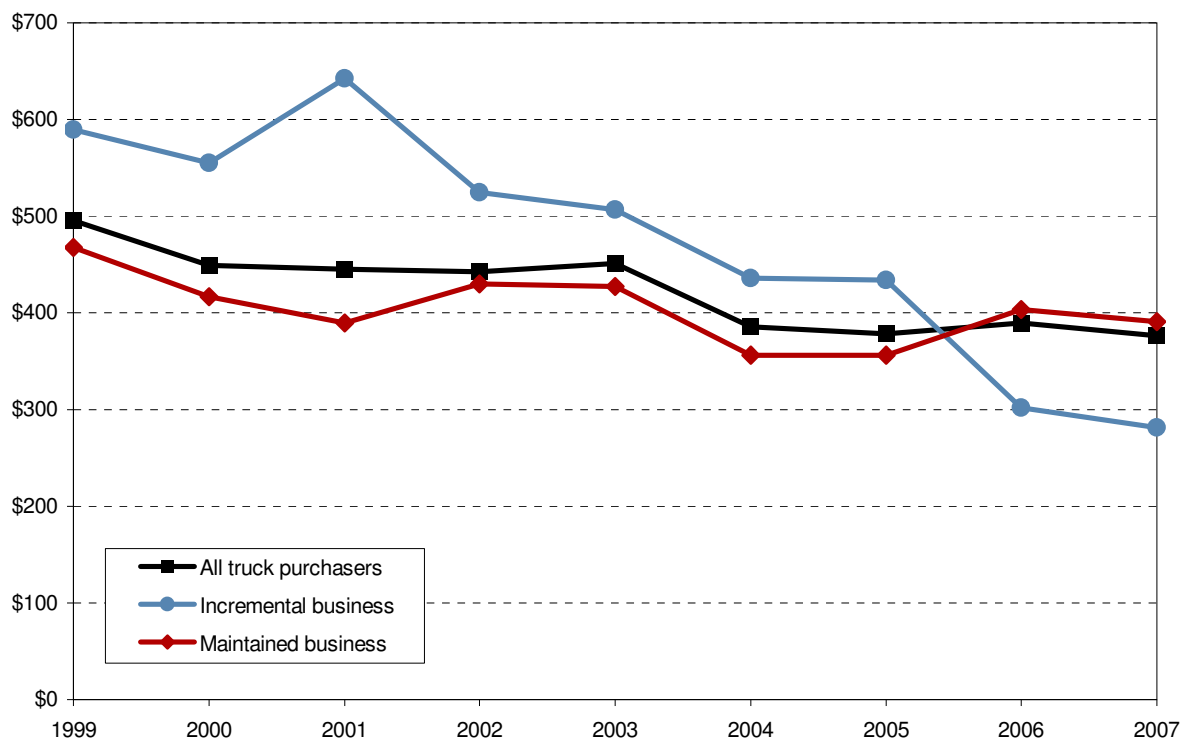
- (253) As I discussed in Section 4.5, “pull-through” competition through the payment of field incentives (also known as CE or SPIFFs) to fleets is an important dimension of competition in the relevant markets for HD transmissions. SPIFFs can constitute a significant reduction in the net effective price paid by fleets for transmissions and can thus confer significant benefits to fleets. The exclusion of ZFM decreased the competitive pressure faced by Eaton and enabled Eaton to reduce significantly the SPIFFS that it paid to end customers.
- (254) Figure 28 shows the average amount of SPIFFs per unit paid by Eaton to fleets during the period 1999–2007.<sup>346</sup> The figure distinguishes between SPIFFs paid to fleets that were already purchasing trucks with Eaton transmissions (“maintained business”) and SPIFFs paid to fleets that purchased trucks with Eaton transmissions for the first time (“incremental business”), as well as providing the average per unit SPIFF paid to any type of fleet. As can be seen, the average per unit SPIFF paid to any fleet decreased by more than 20% between

<sup>346</sup> The figure is based on the data on SPIFF payments provided by Eaton. See EATON-01111742 and EATON-01113313.

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1999 and 2007. The per unit SPIFFs paid to incremental business were reduced even more substantially, steadily declining from \$600 in 2001 to less than \$300 in 2007. The fact that the decrease in per unit SPIFFs was considerably greater for incremental business than for maintained business suggests that the decline in SPIFFs was a consequence of the reduction in competition brought about by the exclusion of ZFM. Although the desire to maintain its goodwill with fleets that had historically requested Eaton's transmissions may have limited to some extent the amount by which Eaton could reduce the SPIFFs paid to "maintained business," the weakening and eventual elimination of the competition coming from ZFM significantly decreased Eaton's incentives to pay SPIFFs to "incremental business."

**Figure 28: Eaton average SPIFF per unit**



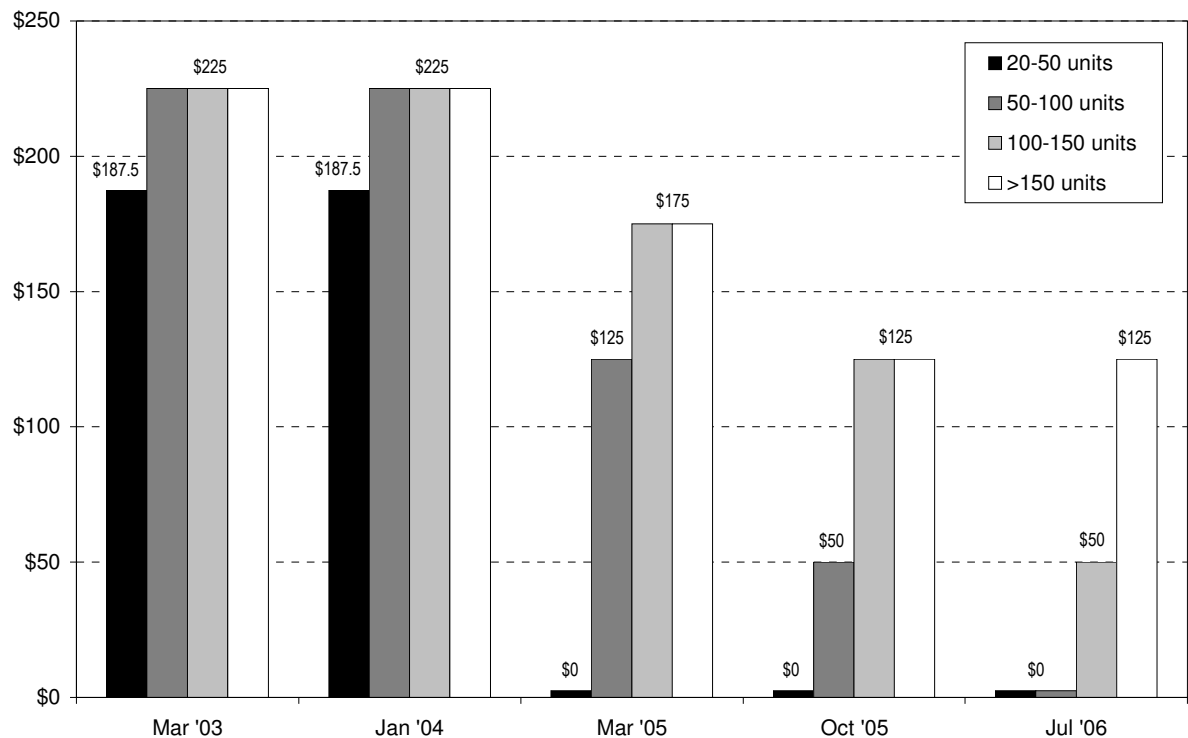
- (255) Evidence of Eaton's plans and efforts to reduce the SPIFFs paid to fleets after ZFM was weakened and eventually excluded from the relevant markets is also provided in a number of documents in which Eaton's lays out its policy regarding the payment of SPIFFs for linehaul manual transmissions.<sup>347</sup> I have used these documents to analyze the evolution over time of the average SPIFFs paid by Eaton to fleets of different sizes for low torque and high torque

<sup>347</sup> See EATON-00146702 (for SPIFFs effective March 2002), EATON-00146706; (for SPIFFs effective January 2004) 00130808 (for SPIFFs effective March 2005), EATON-00146716 (for SPIFFs effective October 2005), and EATON-00146726 (for SPIFFs effective July 2006).

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manual 10-speed linehaul transmissions.<sup>348</sup> The results of this analysis are presented in Figure 29 for high torque and in Figure 30 for low torque transmissions.

**Figure 29: Average SPIFFs on manual 10-speed high torque linehaul transmissions by fleet size.**

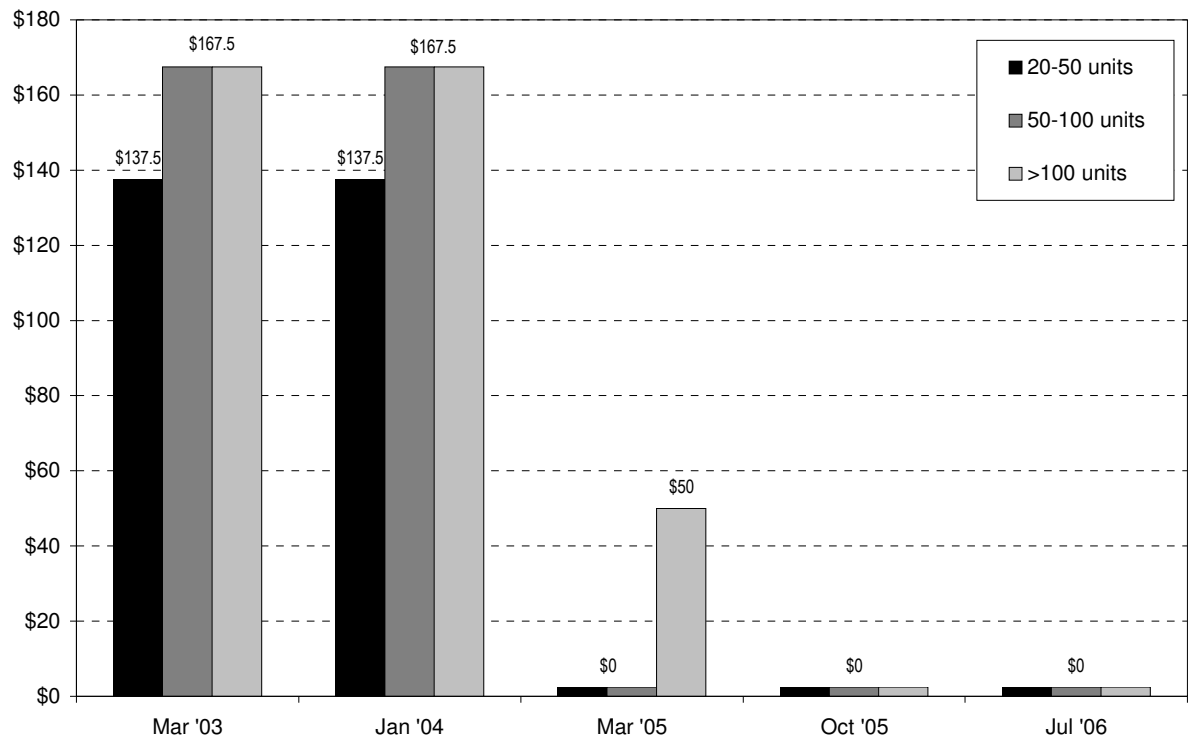


Source: Bates White calculation based on documents listed in footnote 347.

<sup>348</sup> Low-torque transmissions are transmissions with torque rating of less than 1,500 or 1,600 lb/ft, depending on the year, while high-torque transmissions are transmissions with torque rating of more than 1,500 or 1,600 lb/ft, depending on the year. In the documents I considered the SPIFFs vary according to a fleet's strategic importance ("Business Analysis" dimension). I considered SPIFFs for a fleet of average strategic importance.

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**Figure 30: Average SPIFFs on manual 10-speed low torque linehaul transmissions by fleet size.**



Source: Bates White's calculation based on documents listed in footnote 347.

- (256) Both Figure 29 and Figure 30 show that Eaton significantly reduced SPIFFs starting in March 2005. The reduction was particularly pronounced for smaller fleets (*i.e.*, for fleets purchasing less than 50 or 100 units) and for low torque transmissions. As can be seen, the payment of SPIFFs to fleets purchasing less than 50 units was completely discontinued in March 2005 for both low and high torque transmissions. Fleets that purchased less than 100 units were also similarly affected, as the SPIFFs paid to them were significantly reduced for high torque transmissions and completely discontinued for low torque transmissions.
- (257) The reduction in the SPIFFs paid by Eaton to fleets led to an increase in the effective prices paid for Eaton transmissions by these end customers. The harm to end customers arising from Eaton's conduct and the ensuing reduction in Eaton's SPIFFs is likely to be significant, in particular if, absent Eaton's exclusionary conduct, competition in the relevant markets for HD transmissions would have become more intense and SPIFF payments (per unit or as a percentage of sales) would have increased.
- (258) The reduction in SPIFFs was an important reason for Eaton to enter the exclusionary long term agreements with the OEMs and to coerce the OEMs to undertake the anticompetitive

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actions in furtherance of these agreements that I discussed in Section 7.<sup>349</sup> I conclude that the enhanced rebates paid to the OEMs pursuant to the LTAs can be reasonably considered a means by which Eaton shared some of the “monopoly rents” that it obtained by reducing SPIFF payments to fleets with the OEMs. To the extent that the OEMs did not pass through Eaton’s rebates to end customers by reducing the list price of their trucks and/or the upcharges for Eaton transmissions in their data books, Eaton’s exclusionary conduct had the net effect of causing a significant increase in the net effective price paid by end customers for trucks with Eaton’s transmissions (as well as ZF transmissions, as discussed above).

- (259) The fact that the rebates pursuant to the LTAs were not passed through to final fleets by the OEMs is acknowledged by Eaton in an April 2002 email. In this document Eaton explains to Freightliner that by selling Eaton transmissions to fleets that had originally ordered ZFM transmissions, Freightliner would save \$150 per transmissions and would keep this entire amount because “truck prices to fleet customers would not change to reflect this lower truck cost to Freightliner.”<sup>350</sup>
- (260) Not only were the fleets harmed by Eaton’s exclusionary conduct through higher net truck prices but also thorough a worsening of the warranty coverage they received. In June 2002 Freightliner complained that Eaton reneged on previous commitments regarding the warranty coverage of some transmissions installed on their Century Class series and stated: “They [Eaton] want us to help them drive Meritor Transmissions out of business and this is the kind of support we get.”<sup>351</sup>

#### **10.10. Eaton’s output restrictions during the period of its LTAs harmed competition**

- (261) At various times after the signing of the LTAs in 2000, Eaton faced capacity constraints and quality issues that prevented it from selling a sufficient number of transmissions to meet the additional demand from Eaton’s products brought about by the exclusion of ZFM. This was most notably the case with the delays and quantity restrictions that marred the release of the Ultrashift in 2003, but the same problem occurred with other transmissions.

<sup>349</sup> In its 1999 Global Sales and Marketing Strategic Plan Eaton states that it intends to gradually lower incentives per unit to Fleets and dealers, (see EATON-00688920, p. 1).

<sup>350</sup> See EATON-0029198. For a discussion of the lack of pass-through of rebates from the OEMs to final truck purchasers see also EATON-01408524.

<sup>351</sup> See FLINER00153469, in which Freightliner complains that Eaton refused warranty coverage on performance transmissions for Century Class trucks with a GCWR (Gross Combined Weight Rating) in excess of 140 thousand pounds.

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- (262) As a number of documents demonstrate, the OEMs perceived Eaton's inability to produce and deliver an adequate number of transmissions as a serious issue, and they feared that the situation would become worse as a consequence of ZFM's foreclosure and eventual exit from the market. For example, in June 2002, Freightliner complained to Eaton about Eaton's inability to deliver the number of transmissions that Eaton required Freightliner to purchase in order to meet its share target in the following strong terms:

Eaton continues to short Freightliner transmissions while it holds up a share related rebate ... without the courtesy of advising us! Weeks ago your company requested Freightliner to cease shifting Meritor transmissions to Eaton due to your company's lack of capacity/inability to deliver. I need 2 things from you folks: 1. a rebate check with accumulated interest. 2. an explanation of what the hell is with you guys. Demand 92% share, deliver 72%. ... And to think we took Meritor out of the data book???<sup>352</sup>

Similar concerns with Eaton's practice of putting the OEMs on allocation and the harm caused by Meritor's exit are discussed in a number of other OEM documents,<sup>353</sup> as are the OEMs' concerns about Eaton's inability to deliver.<sup>354</sup>

- (263) When faced with Eaton's inability to deliver sufficient volume, the OEMs requested that the stringent penetration requirements in the LTAs be relaxed or at least that the FreedomLine, for which Eaton's comparable product (the Ultrashift) was only available in limited release, be excluded from the calculation of Eaton's penetration.<sup>355</sup> However, Eaton refused to accommodate the OEMs' requests.<sup>356</sup>
- (264) Eaton's refusal is a clear indication that the purpose of the LTAs was not only, or even principally, to expand the number of units sold by Eaton (since this was not possible given

<sup>352</sup> See EATON-00060221.

<sup>353</sup> See VM 042281 and See VM 042280.

<sup>354</sup> See, for example, EATON-00032632, (August 2002) in which Eaton reported that: "Freightliner is concerned that we [Eaton] will become a dictatorial supplier like Allison. This concern has driven Freightliner to request that we guarantee 100% of Freightliner's material (units and loose parts) will be shipped on time;" and EATON-00086409 (July 2002) in which Eaton claims that: "Freightliner [is] actively seeking to switch fleets to Eaton—until we could not deliver".

<sup>355</sup> Starting in December 2001, PACCAR repeatedly asked Eaton to exclude the FreedomLine from the calculation of Eaton's penetration for the share-based rebates. PACCAR was concerned about the poor reliability of the Autoshift and the limited availability of the Ultrashift (see document 000656 in the PACCAR production, EATON-00976400 and EATON-00685867). In May 2003, International informed Eaton that it was planning to temporarily exclude the FreedomLine from its penetration calculations because Eaton's Ultrashift was only available as "Limited Quantity Release." In particular, International states that: "The competitive [FreedomLine] product is available both advertised and with no quantity restrictions, making the inclusion of these models in our penetration figures an unfair penalty to International" (see EATON-01208178.)

<sup>356</sup> See PACCAR000661 and PACCAR 000654 and EATON-00685867 and EATON-00969271.



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Eaton's capacity constraints) but rather to deprive ZFM of the opportunity to make sales, thus raising its costs and ultimately driving it out from the market. Eaton's refusal to relax the penetration requirement also drew informal objections, as the following email from William Fouch demonstrates:

Is there any way we can push to get our 92% PP (and Balance Scorecard) commitment lowered to reflect this [capacity constraint]? I understand that Freightliner is a long way from 92% anyway, but having a goal for something our company simply can't provide is just not right. I'd like to recommend an 85% goal?<sup>357</sup>

- (265) Besides clearly indicating Eaton's exclusionary motives with its LTAs, Eaton's refusal to relax the penetration requirements in the LTAs, even when it was not able to deliver sufficient volume caused significant harm to the OEMs and ultimately to truck purchasers. Absent Eaton's LTAs and other exclusionary actions, the OEMs would have been able to purchase a greater number of transmissions and thus to build and sell a greater number of trucks.

#### **10.11. Eaton's agreements with Volvo/Mack are *per se* illegal horizontal price-fixing agreements**

- (266) In contrast to the LTAs between Eaton and the other OEMs in which the parties agreed to increase the prices of ZFM's competing transmissions (either in absolute or relative terms), the agreements between Eaton and Volvo/Mack with regard to the price and quantity of both Eaton and Mack transmissions that Mack would sell to its truck customers are horizontal price-fixing agreements between horizontal competitors with regard to their own competing products. The conclusion that horizontal price-fixing agreements between Eaton and Volvo/Mack harm competition should be self-evident: such horizontal price-fixing agreements have been ruled to be *per se* illegal, and subject to criminal sanctions, under Section 1 of the Sherman Act, as the entire purpose of a horizontal price-fixing agreement is to increase prices paid by consumers and limit competition. Indeed, the evidence discussed above clearly shows that Volvo/Mack in fact increased the prices of Mack HD Transmissions in order to comply with their agreement with Eaton, and Eaton put considerable monetary pressure on Volvo/Mack to comply with the terms of their price-fixing agreement. Mack increased the price on its T200 series transmissions to be \$1,000–\$3,000+ over Eaton's standard transmission in the period 1997–2001,<sup>358</sup> and again increased the price on its T300

<sup>357</sup> See EATON-00031123.

<sup>358</sup> See VM000161.016.

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series transmissions (not in the original 1997 Supply Agreement) by approximately \$500 in 2004 to give a price advantage to Eaton transmissions.<sup>359</sup>

- (267) With regard to Mack's incentives to enter into this horizontal price-fixing agreement with Eaton, it is clear that in the absence of the LTA, Mack's unilateral (presumably profit-maximizing) strategy was to charge its customers significantly less for Mack transmission than for Eaton transmissions, as occurred during the brief period in which the Eaton LTAs lapsed during the period July–September 2002, which would have resulted in significantly lower sales of Eaton transmissions. However, during the 2003–2004 period of its dispute with Eaton regarding the prices that Mack was charging for its transmissions, Mack recognized that if Mack did not increase its transmission prices pursuant to its price-fixing agreement with Eaton, it would be “jeopardizing the annual Eaton cost improvements which is worth millions.”<sup>360</sup> Thus, one can interpret Mack's agreement not to compete with Eaton in the transmission markets as being contrary to its own unilateral business interest, in the absence of receiving a compensating side payment from Eaton. In this instance, the side payment from Eaton to Mack in order to enter the price-fixing agreement takes the form of year-over-year price reductions and share-based rebates, as stipulated in the LTA (as well as in return for Eaton's agreement not to enforce what Eaton claimed to be its patent rights against Mack).
- (268) It is also important to note that the price-fixing agreement between Eaton and Volvo/Mack also included an agreement by Volvo/Mack to effectively increase the prices of ZFM HD Transmissions. While I do not have access to Mack's data books, I do have access to Volvo's data books. From these, for the period 2001 to 2005, I have computed the average “upcharge” that Volvo imposed on end customers who purchased a truck with a comparable ZFM HD Transmission relative to the Eaton “standard/preferred” HD Transmissions.<sup>361</sup> As shown in Figure 31, Volvo charged a price premium of between \$176 and \$321 per unit for trucks equipped with comparable ZFM transmissions rather than the standard Eaton transmissions. Similarly, as shown in Figure 32, the price premium imposed by Volvo on optional ZFM transmissions (MO-16G10C-M16) relative to comparable optional Eaton transmissions (FRO-16210C), both of which are listed as options relative to the Eaton standard transmission (FRO-13210C), ranges from \$161 to \$546 per unit.<sup>362</sup> While I have not performed detailed calculations for other product combinations, based on reviewing the

<sup>359</sup> See VM2\_00024316 and VM2\_00024457.

<sup>360</sup> See VM2\_00024308.

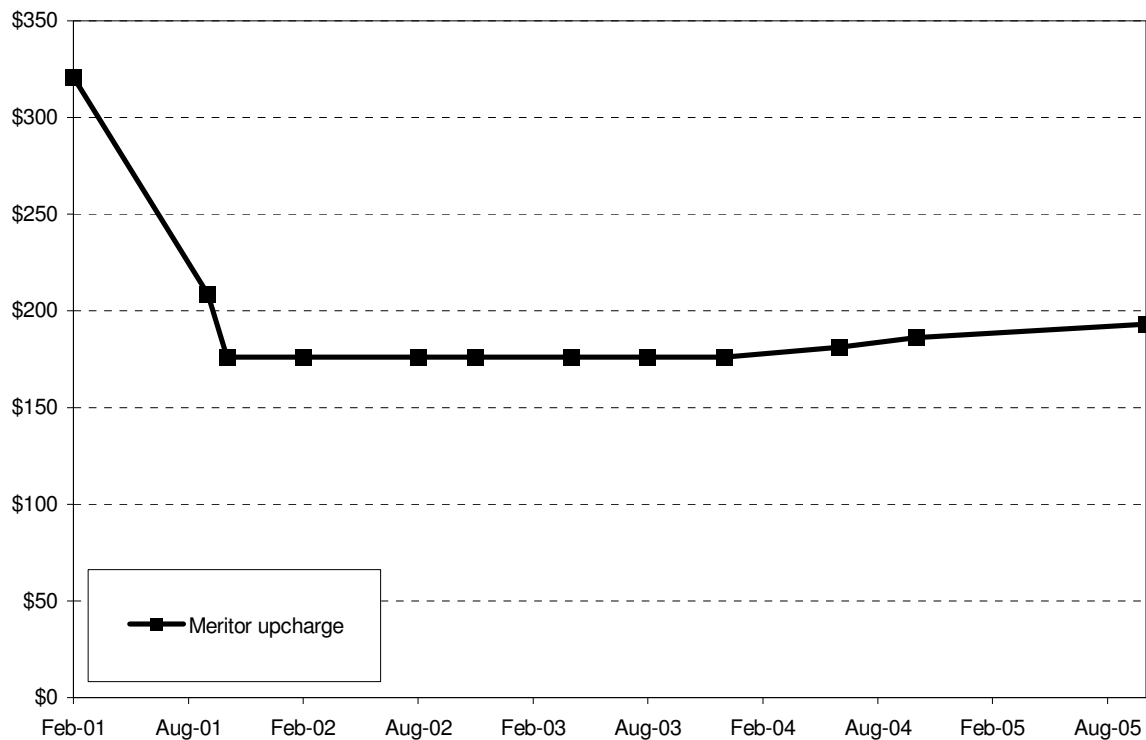
<sup>361</sup> The standard transmission was Eaton's FRO-13210C, namely a 10-speed, 1350 lb-ft torque rating linehaul manual transmission. The comparable Meritor product was MO-13G10C-M13.

<sup>362</sup> The Meritor MO-16G10C-M16 and Eaton FRO-16210C are both 10-speed, 1650 lb-ft torque rating linehaul manual transmissions.

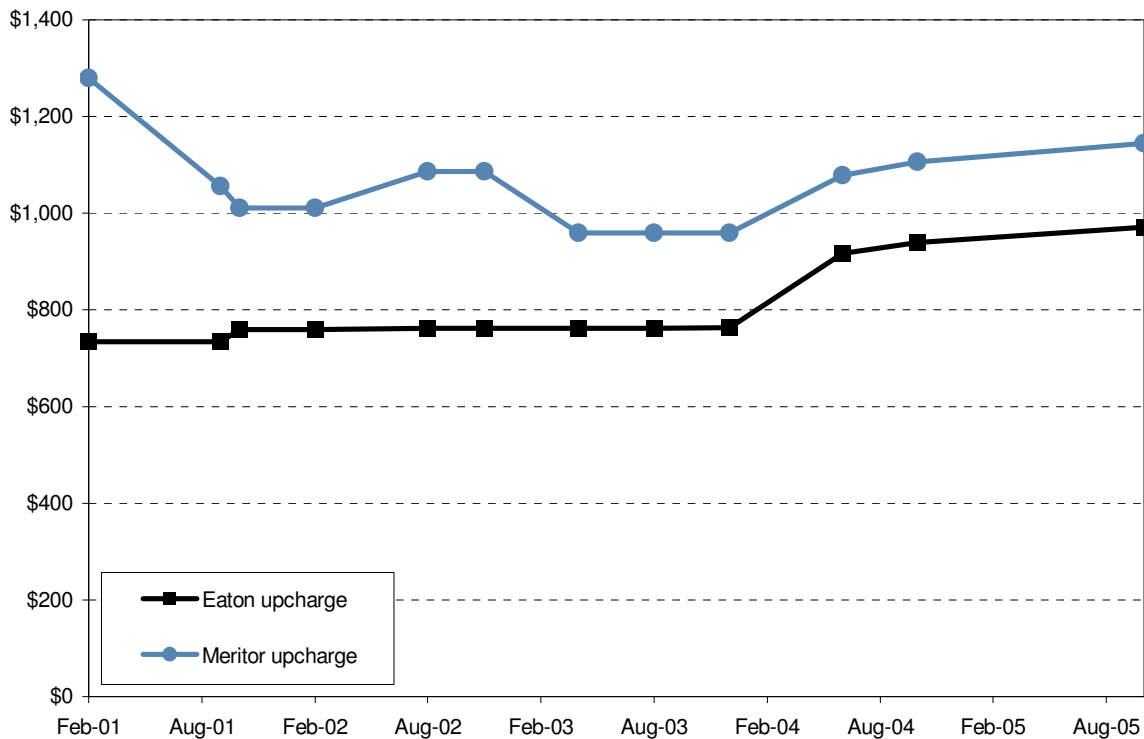
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information for other models listed in the Volvo data books, it appears that this pattern of a price penalty imposed by Volvo on ZFM transmissions applies to other ZFM and Eaton HD Transmissions more generally as well. Clearly, such persistent pricing differences—across time, across products, and even across “options”—have no basis in the relative installed costs of the transmissions at issue, but rather reflect a conscious pricing policy by Volvo—consistent with the terms of the Eaton LTA—to systematically increase the prices paid by end customers for ZFM HD Transmissions, reduce sales of ZFM HD Transmissions, comply with the market share provisions established by Eaton in its LTAs, and ultimately foreclose ZFM from the relevant markets.

**Figure 31: Volvo “upcharge” for comparable ZFM transmissions relative to standard Eaton transmission**



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**Figure 32: Volvo “upcharge” for comparable ZFM and Eaton transmissions listed as options to standard Eaton transmission**

## 11. Damages to ZFM from Eaton’s anticompetitive LTAs with the OEMs

### 11.1. Overview

- (269) Eaton’s anticompetitive conduct with respect to the OEMs, in addition to causing harm to competition and consumers, caused significant financial harm to ZFM by foreclosing ZFM from the relevant markets for HD Transmissions. An appropriate measure of damages to ZFM is the loss of profits (in present value terms) and the impairment of the business value resulting from Eaton’s anticompetitive conduct. In principle, both components of damages can be computed in terms of the present value of the lost profits to ZFM from the beginning of the damage period to perpetuity, discounted to the present using an appropriate discount rate. As an equivalent approach, I have computed ZFM’s damages as two distinct components: the lost profits for the period 2000–2009 (or more precisely, from July 2000, the date in which I assume that the conduct begins for my damages calculations, through February 2009, the date of this report); and the lost enterprise value of the ZFM HD

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Transmission business on a going-forward basis based on comparable market valuations of other similar publicly-traded companies.

- (270) While the focus of my analysis above has been on ZFM's HD Transmission business, ZFM also had an important clutch business. Clutches and transmissions are "complements" in consumption, as indicated by the high correlation between ZFM's clutch sales and transmissions sales (reported below). Perhaps reflecting this correlation in sales, Eaton's LTAs relating to HD Transmissions also encompassed clutches as well. Thus, I would expect ZFM's sales and profits from its clutch business to have been higher absent Eaton's anticompetitive conduct in the relevant HD Transmission markets during the period 2000–2009, and I would expect ZFM's "but-for" clutch business to have increased the enterprise value of the ZFM business on a going-forward basis as well. While I have computed an estimate of the damages to ZFM's clutch business, proportional to the damages to ZFM's HD Transmission business, in order to be conservative, I have not aggregated the damages to ZFM's clutch business with the damages to its HD Transmission business in my calculations below.
- (271) As reflected in the income statements of Eaton's HD Transmissions division, the sale of HD Transmissions in North America is a highly profitable business. In 2006, the most recent year for which Eaton has produced financial information, Eaton's HD Transmissions division earned a gross profit ("manufacturing profit") of approximately \$570 million dollars and an operating profit of approximately \$354 million dollars.<sup>363</sup> In the absence of Eaton's exclusionary conduct, ZFM would have been able to obtain a significantly greater share of HD Transmission sales than was in fact the case. As a consequence, ZFM would have earned a sizable share of the profits that Eaton earned over the period July 2000 to the present and that Eaton will continue to earn on a going-forward basis. As Eaton's anticompetitive conduct forced ZFM to exit the market, an appropriate measure of damages will include the permanent impairment in the value of the ZFM business, as reflected either in the present value of lost profits on a going-forward basis or in terms of a multiple of ZFM's "but-for" profits derived from a "comparables" approach.
- (272) In antitrust analysis, a standard approach to measuring the damages caused to the plaintiff by the defendant's exclusionary conduct is to estimate the incremental profits (*i.e.*, incremental revenues minus incremental costs) that the plaintiff would have earned, but for the defendant's anticompetitive conduct. I follow this standard approach by first estimating the incremental revenues that ZFM would have earned "but for" Eaton's anticompetitive conduct

<sup>363</sup> See Eaton's 2007 HD Strategic Plan, EATON-00304400.

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and by then subtracting from this number the incremental cost that ZFM would have had to incur in order to achieve these incremental sales.

- (273) For the purpose of calculating damages in this section, I conservatively assume that Eaton's conduct began in July 2000, the date on which the International and PACCAR LTAs, discussed above, went into effect. Although this working assumption allows me to determine a clear starting point for the calculation of damages, in reality Eaton's anticompetitive conduct started well before July 2000, as evident by the previous LTAs that Eaton had with the OEMs prior to that date and by the horizontal price-fixing agreement between Eaton and Mack dating back to 1997. The actual damages to ZFM caused by Eaton's anticompetitive conduct are thus likely to be significantly higher than the conservative estimates I present below.

## 11.2. ZFM incremental revenue

- (274) In order to estimate the incremental revenue that ZFM would have earned in the absence of Eaton's anticompetitive conduct, I rely on the information provided on page 4 of ZFM's Revised Strategic Business Plan (the "November 2000 SBP") for fiscal years 2001–2005, presented to ZFM's Board of Directors on November 30, 2000. This document provides a reliable, albeit conservative, set of estimates prepared by ZFM that can be used as the basis for a damages calculation. It is important to note, however, that as this forecast was prepared after Eaton's anticompetitive conduct began, these forecasts of ZFM's market share were still affected by Eaton's anticompetitive conduct up to that point in time and thus will tend to understate ZFM's "but-for" market share (*i.e.*, the market share ZFM would have been able to achieve in the absence of Eaton's anticompetitive behavior).
- (275) Strategic business plans developed by ZFM in other years, both before and after November 2000, are also available, but they have disadvantages relative to the November 2000 SBP. In particular, the estimates provided in the strategic business plans prior to November 2000 were revised to account for recent changes in the transmission business environment during 2000 and other factors specifically affecting ZFM's market share, including Eaton's conduct with respect to the OEMs in response to ZFM's entry into the market. Thus, while business plans prior to November 2000 may provide a reasonable estimate of ZFM's "but-for" market share particularly for the early years of Eaton's "OEM partnership period," *i.e.*, for the period July 2000–October 2001, I rely on the November 2000 SBP in order to be conservative, particularly with respect to the market forecast for later years. The forecasts provided in strategic business plans drawn after November 2000 are also likely to be less reliable for purposes of estimating ZFM's but-for revenues, because the forecasts themselves are

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increasingly affected by the significant negative effects of Eaton's exclusionary conduct on the expected sales and profits of ZFM.

- (276) Table 5 reports the dollar value and number of units of the manual (G-platform) and automated manual (FreedomLine) transmissions that ZFM expected to sell for the period FY 2001–FY 2005, according to the November 2000 SBP. These forecasts were based on ZFM's estimates of the number of future Class 8 truck builds in NAFTA. However, the actual number of Class 8 truck builds in NAFTA differed from ZFM's estimates because of macroeconomic fluctuations that ZFM could not have predicted accurately at the time it prepared the November 2000 SBP. In order to ensure that my estimate of ZFM's damages only encompasses the effect of Eaton's anticompetitive conduct on ZFM, and to ensure that I have appropriately accounted for identifiable factors unrelated to Eaton's anticompetitive conduct, I have taken into consideration the impact of macroeconomic fluctuations on the market for Class 8 trucks relative to ZFM's November 2000 forecast. I therefore adjust the number of units provided in ZFM's November 2000 SBP in order to take into account the actual number of Class 8 truck builds over the forecast period. I make this adjustment by calculating ZFM's forecast share of all Class 8 truck builds and multiplying this share by the actual number of Class 8 truck builds to obtain the number of transmissions that ZFM would have sold, but for Eaton's anticompetitive conduct. The details of this adjustment and ZFM's resulting but-for sales are presented in Table 5 and explained below.
- (277) In order to obtain ZFM's forecast share of trucks built in NAFTA, I divide the November SBP forecast number of ZFM units by the forecast total number of heavy duty truck builds. I then obtain the estimated number of ZFM's transmission units—but-for Eaton's anticompetitive conduct—by multiplying ZFM's forecast share by the actual total number of heavy duty trucks built in NAFTA in each year.
- (278) The November 2000 SBP does not provide forecasts of ZFM's expected transmission business after FY 2005. Therefore, in order to bring the lost profits analysis current up to the date of this report, I use the information from the 2000–2005 forecast to estimate ZFM's market share for 2006–2009 using a highly conservative approach. In particular, while I assume (highly conservatively) that the “but-for” share of ZFM and Meritor Transmission's manual transmissions would have remained stable at its FY 2005 level during the FY 2006–FY 2009 period, I expect that the share of the FreedomLine as a percentage of total heavy-duty linehaul transmissions would have continued to grow during this period. This expectation is consistent with the evidence that I reviewed regarding: a.) the rate of expected growth of the market penetration of automated mechanical transmissions in the North American market; b.) the rate at which the FreedomLine was adopted by end customers once it was introduced in the North American market, up until ZFM was forced to abandon its plans to industrialize production in the U.S. due to Eaton's anticompetitive conduct; c.) the



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experience with automated mechanical transmissions in Europe; and d.) the benefits to end customers of automated mechanical transmissions in terms of increased fuel efficiency, reduced driver training, reduced driver turnover, increased resale values of trucks, and other similar benefits.

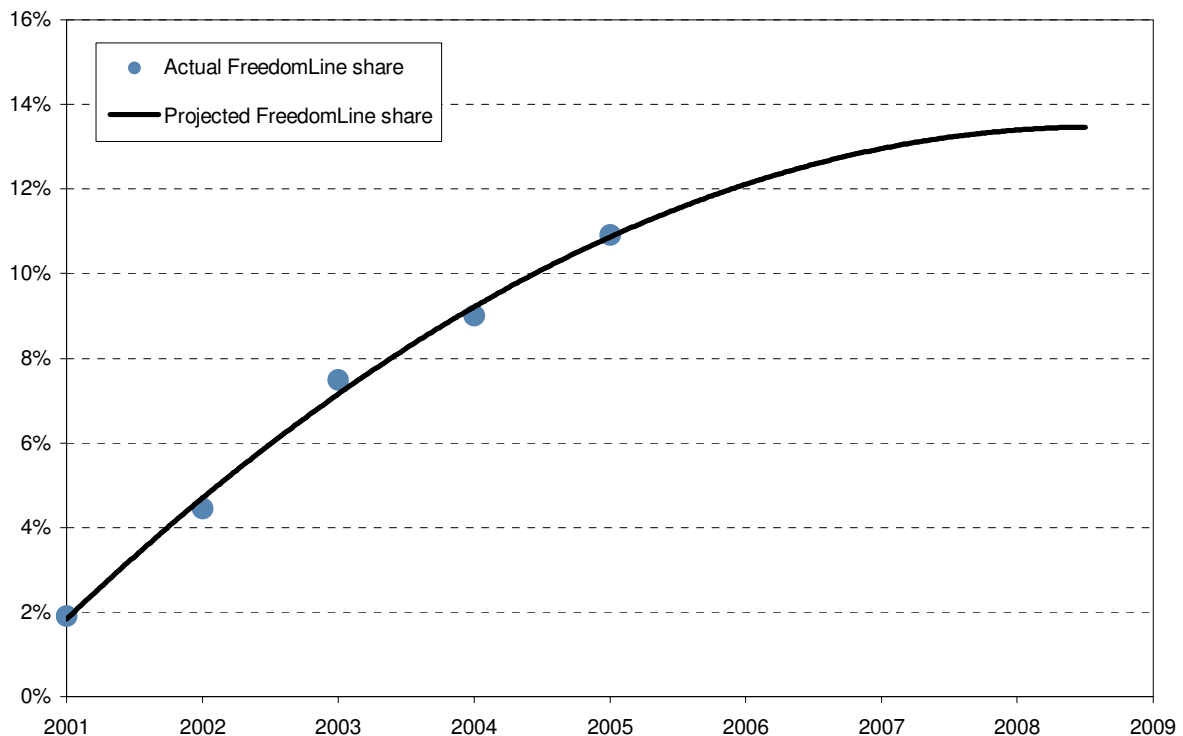
- (279) In particular, it is reasonable and highly conservative to expect that the share of the FreedomLine in total heavy-duty linehaul sales would continue to grow following the path shown in Figure 33. This growth path was obtained by fitting a simple polynomial model to the “but-for” shares of the FreedomLine for FY 2001–FY 2005 (fitting a simple linear model to the FreedomLine “but-for” shares for FY 2001–FY2005 would produce a significantly higher “but-for” shares for the FreedomLine in FY 2006–FY2009). This fitted model has the advantage of allowing the growth rate of the “but-for” shares to vary over time.<sup>364</sup> The FreedomLine shares predicted by this approach are 12.2% for FY 2006, 13.1% for FY 2007, 13.5% for FY 2008, and 13.6% for the first five months of FY 2009. I should note that I consider this approach to be highly conservative, as it effectively assumes that the FreedomLine and automated manual transmissions more generally would have reached a market saturation point well below the level observed in the European market, a market in which these transmissions continue to gain share and in which there is an absence of anticompetitive conduct by Eaton. Similarly, this procedure to flatten the growth path of the FreedomLine is in stark contrast to the nearly exponential growth in FreedomLine sales upon their introduction, as visible in Figure 19, above, up until ZFM was forced to abandon its plans to industrialize production in the U.S. as a consequence of the anticompetitive conduct by Eaton.

<sup>364</sup> In particular, by fitting a second degree polynomial to the actual market shares of the FreedomLine for FY 2001–FY 2005 I obtained the following predictive equation for the projected shares:  $S_t = 0.0347 * (\text{year}) - 0.002 * (\text{year})^2 - 0.0143$ , where “year” = number of years since FY 2000 (i.e., year = 1 for FY 2001, year = 2 for FY 2002, etc.). As can be seen from the figure, this equation fits the actual markets shares very well, with a R-squared statistic of 0.995.



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**Figure 33: Actual and projected share of the FreedomLine**



- (280) I then calculate the number of additional units that ZFM would have sold in the absence of Eaton's anticompetitive conduct by subtracting the actual number of units sold by ZFM from the total "but-for" number of units obtained with the method explained above. I obtained the actual number of manual and automated manual transmissions from ZFM's sales data.
- (281) Finally, I estimate the incremental revenue that ZFM would have earned in the absence of Eaton's anticompetitive conduct by multiplying the incremental number of units by the average price of these units. I obtained the average price by dividing the forecast (but-for) net sales by the forecast (but-for) number of units provided directly in the November 2000 SBP.

### 11.3. ZFM Incremental cost

- (282) In order to calculate the incremental costs that ZFM would have had to incur to produce the larger "but-for" volume of transmissions, I rely on the detailed financial information provided on page 4 of ZFM's November 2000 SBP. The plan provides estimates of the manufacturing costs that ZFM would have had to incur in order to produce their forecast number of transmissions. These manufacturing costs include costs that vary directly with the volume of production (such as material and direct labor, for example), and other costs that

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are generally fixed and do not vary with the volume of production (such as depreciation and fixed costs). In estimating damages, it is generally appropriate to exclude fixed costs from the estimate of incremental costs, since such fixed costs are also incurred at the lower levels of production prevailing as a result of the conduct at issue. The details of the calculation of incremental cost are presented in Table 6 and explained below.

- (283) I first obtain the predicted manufacturing costs by adding the standard costs and variances in the November 2000 SBP. These predicted manufacturing costs include, among other items, an estimate of “burden,” or manufacturing overhead costs, that have been allocated to the production of HD Transmissions. This “burden” can in turn be broken down into a variable and a fixed component. In order to estimate the share of fixed vs. variable burden, I rely on estimates provided by ZFM.<sup>365</sup> The fixed component of burden includes, among other cost items, depreciation.
- (284) To obtain the correct amount of the total variable costs implied by the figures reported in the November 2000 SBP, I subtract the fixed component of the “burden” from ZFM’s forecast of manufacturing profits. I then obtain the per unit variable cost by dividing the total variable cost by the number of ZFM transmission units forecast in the November 2000 Revised SBP. Finally, I calculate the total incremental cost that ZFM would have incurred in the absence of Eaton’s anticompetitive conduct by multiplying the per unit variable cost by the number of incremental units obtained in Table 5.

#### **11.4. ZFM lost profits**

- (285) I calculate the incremental profits that ZFM lost since July 2000 up to the date of this report as a consequence of Eaton’s anticompetitive conduct by subtracting the “but-for” incremental costs from the “but-for” incremental revenue calculated above. This calculation is shown in Table 7, resulting in nominal lost profits of approximately \$332 million over the period July 2000–February 2009.
- (286) In order to calculate the amount of damages suffered by ZFM during this time period, it is also necessary to account for the time value of money, *i.e.*, to account for the fact that the loss in profits during this earlier time period deprived ZFM of a financial return on these lost profits through the present time (and until ZFM receive a payment from Eaton in the amount of the damages), or equivalently, to account for the fact that depriving ZFM of its lost profits imposed additional financing costs on ZFM as well. I account for this by converting the nominal amount of incremental profits lost by ZFM over the July 2000–February 2009

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<sup>365</sup> See “Burden split out.xls”.

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period into February 2009 (present value) dollars. In order to convert the nominal damages into a present value equivalent, I use ArvinMeritor's cost of debt, as I consider that to be an appropriate and conservative interest rate. As a sensitivity analysis, I also report the present value of damages using a risk-free rate based on the 10-year Constant Maturity Treasury Bill. While the use of a higher interest rate reflecting ZFM's cost of capital during this time period may also be appropriate, I use ArvinMeritor's cost of debt in order to be conservative and as a "middle ground" approach between the risk-free rate and ZFM's cost of capital. In present value terms, the lost profits of ZFM for the period July 2000–February 2009 due to Eaton's anticompetitive conduct is approximately \$384 million using a risk-free discount rate and \$431 million using ArvinMeritor's cost of debt.

### **11.5. ZFM's but-for market shares**

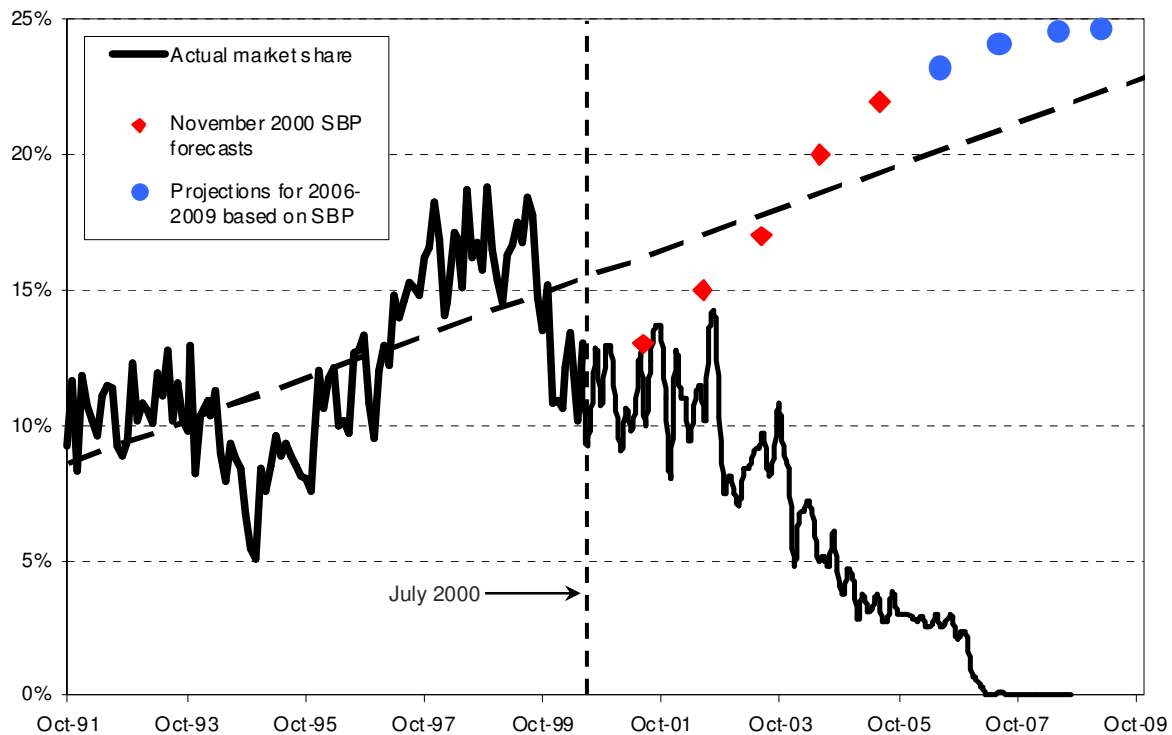
- (287) In this section I demonstrate that ZFM's shares forecast in the November 2000 SBP provide a reasonably accurate and conservative estimate of ZFM's "but-for" shares. Figure 34 shows ZFM's actual shares and the shares that ZFM predicted in its November 2000 SBP.
- (288) The first issue to note is that, as mentioned in paragraph (273), although for the purpose of calculating damages in this section I assume that Eaton's anticompetitive conduct began in July 2000, in reality this conduct occurred throughout much of the 1990s, even if the terms and effects of this conduct were not as severe as in Eaton's "OEM partnership" period at issue. Given that the terms of Eaton's LTAs became increasingly exclusionary almost immediately following the formation of ZFM, it appears that Eaton perceived ZFM—and particularly the FreedomLine transmission—as a more significant near-term competitive threat to its monopoly than the competitive threat posed by Meritor as a stand-alone company. As an example of the increasingly exclusionary terms of Eaton's LTAs even prior to July 2000, in February 1999, Eaton and Freightliner entered into a LTA in which Eaton induced Freightliner to agree to eliminate the drivetrain credit that it was granting to customers that purchased a ZFM transmission and clutch, as discussed above. This agreement by Freightliner and Eaton to increase the prices of ZFM's products, an anticompetitive act as discussed further above, penalized ZFM's transmissions at the OEM that accounted for the largest share of ZFM's sales and contributed significantly to the decline in ZFM's market penetration after the summer of 1999.
- (289) To the extent that other factors unrelated to Eaton's exclusionary conduct also contributed to this decline in ZFM's market shares, ZFM took these other factors into account in preparing its November 2000 SBP. As can be seen in Figure 34, in its November 2000 SBP, ZFM conservatively predicted a share for FY 2001 that was, in fact, quite close to its actual share, in part because ZFM had already factored in Eaton's anticompetitive conduct with its LTAs

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that had occurred by that time. Figure 34 also shows that the forecast growth in ZFM's market share between 2001 and 2005 is reasonable, as it is largely consistent with the growth that can be predicted by fitting a linear trend to the "pre-conduct" data. This fitted linear trend still assumes that the pre-2000 period was free of Eaton's anticompetitive conduct; using data prior to February 1999 (the date of Eaton's first LTA with Freightliner) as the "pre-conduct" period would result in a linear trend with a steeper slope than shown in Figure 34.

- (290) The analysis presented in Figure 34 clearly shows the reasonableness of using ZFM's market shares forecast in the November 2000 SBP as a basis for deriving a "but-for" forecast, and particularly the highly conservative assumption this leads to with regard to ZFM's 2000 – 2002 "but-for" market share. Given the importance of ZFM's predicted "but-for" market shares for estimating damages, in the following section, I investigate this issue further by constructing and estimating an econometric model of ZFM's share.

**Figure 34: ZFM's actual and but-for shares of Class 8 truck builds in NAFTA**



### **11.6. An econometric model of damages to ZFM caused by Eaton's anticompetitive conduct**

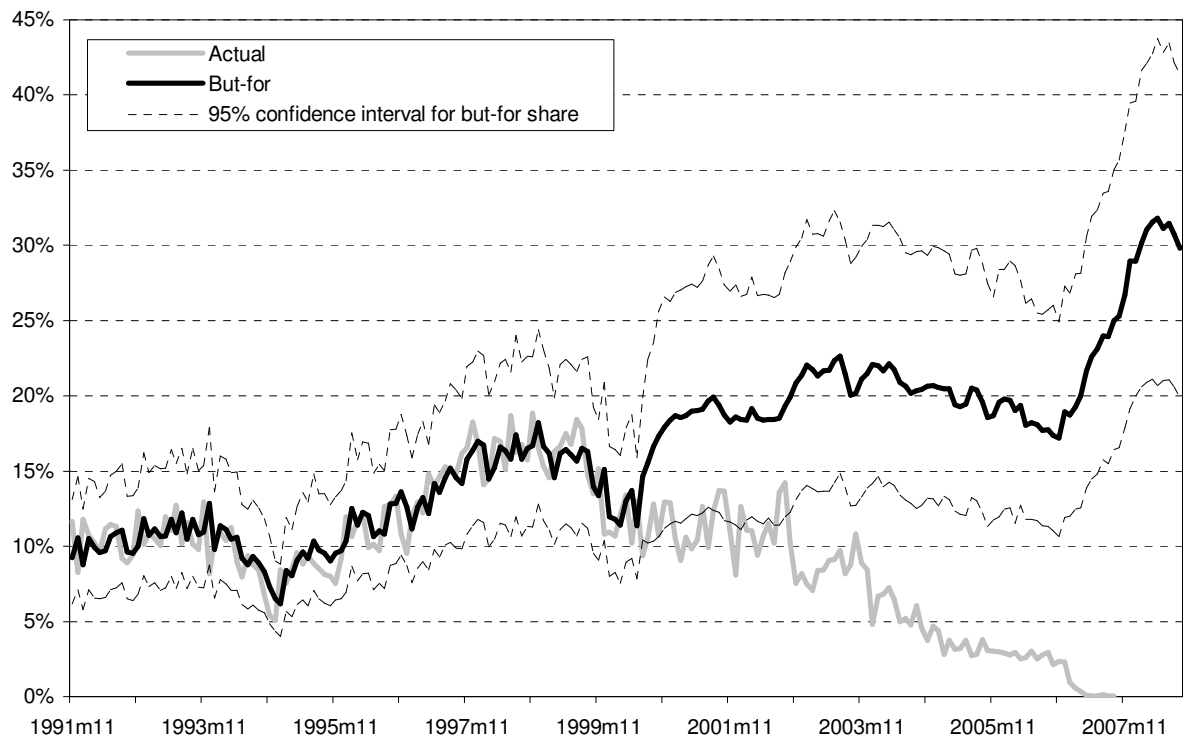
- (291) Although I consider the estimates of ZFM's lost profits as derived from the November 2000 SBP to be reliable, I have also explored alternative methodologies in order to confirm the accuracy of these estimates. One alternative methodology is an econometric model of ZFM's share of Class 8 truck builds in NAFTA over time. The results of this econometric model provide an overall confirmation of the reasonableness of the estimates of ZFM's future market shares contained in the November 2000 revised SBP. It is likely, however, that such an econometric model will underestimate ZFM's share during the period of anticompetitive conduct for two reasons. First, given that the econometric model is calibrated on ZFM's sales prior to July 2000, and hence prior to the introduction of the FreedomLine, it cannot adequately account for the likely positive impact on ZFM's "but-for" market share of a superior technology such as the FreedomLine. Second, the econometric model I used assumes that Eaton's anticompetitive conduct began with the PACCAR and International LTAs on July 1, 2000. However, Eaton had previously entered into LTAs with each of the OEMs during the 1990s, and, as discussed above, Eaton's 1999 LTA with Freightliner, its 1997 LTA with Mack, and its 1999 LTA with VTNA had similar anticompetitive provisions as those LTAs signed subsequently. Even though these earlier pre-2000 LTAs did not have as severe an impact on ZFM as Eaton's subsequent LTAs, the anticompetitive provisions in these agreements had some dampening effect on ZFM's sales of transmissions during this earlier period. Thus, the pre-2000 information used to calibrate the market share of ZFM in a competitive market will understate the market shares that ZFM could achieve under actual competitive market conditions, *i.e.*, absent any anticompetitive conduct by Eaton. For both of these reasons, I expect that the predictions of ZFM's "but-for" market shares during the conduct period obtained with this econometric model will provide a highly conservative lower-bound estimate.
- (292) The econometric model I use to estimate ZFM's monthly share of transmission sales uses as explanatory variables a set of macroeconomic variables, ZFM's share in the previous month, and an indicator (or "dummy") variable to indicate whether the month in question falls inside or outside the period of Eaton's exclusionary conduct. The set of macroeconomic explanatory variables that I use in the econometric model includes: the number of heavy truck builds in NAFTA; an index of consumer confidence in the U.S.; the average wholesale price of oil in the U.S.; and the 5-year U.S. Treasury Constant Maturity interest rate. In addition to these macroeconomic variables, I also include ZFM's market share in the previous month in order to capture market dynamics. Finally, the indicator variable that I use to indicate the presence or absence of Eaton's exclusionary conduct takes a value of zero before July 2000 and a value of one from July 2000 onward. I allow the conduct indicator variable to interact with all of the other explanatory variables in order to test whether Eaton's conduct introduced a

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structural change in the relationship between ZFM's share and the other explanatory variables in the model. Appendix D provides additional details regarding the econometric approach that I use to estimate the model. The econometric model fits the data well, as evidenced by an R squared statistic higher than 95% and by the close fit of the predicted values to the observed values (see Figure 36 in Appendix D).

- (293) I use the econometric estimates to predict what ZFM's market shares in the conduct period would have been in the absence of Eaton's anticompetitive conduct by setting the coefficients on all of the explanatory variables interacted with the conduct variable equal to zero. Taking into account the inclusion of the lagged share among the explanatory variables, I obtain a prediction of ZFM's "but-for" market shares recursively. This procedure accounts for the fact that in the absence of Eaton's anticompetitive conduct, ZFM's "but-for" market shares would have followed a completely different time path as compared to its actual market shares.
- (294) Figure 35 shows the predicted "but-for" market shares for ZFM that I obtain using this econometric approach. Recognizing the variance associated with the predicted "but-for" shares, *i.e.*, they can take on values higher or lower than their expected values, I also report the 95% confidence interval boundaries.

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**Figure 35: ZFM and Meritor Transmission's actual and but-for market share using econometric model**

Source: Bates White (see Appendix A for details).

- (295) In order to facilitate a comparison of these econometric results with the estimates of ZFM's "but-for" shares obtained from other sources of information, I have converted the monthly "but-for" shares predicted by the econometric model into annual shares for each fiscal year at issue. These annual shares for ZFM are reported in Table 2, with the annual shares predicted by the November 2000 SBP included for purposes of comparison, both for manual transmissions and for ZFM's automated mechanical transmissions. As is evident in Table 2, the econometric model produces estimates that are reasonably consistent with ZFM's predicted total shares reported in its November 2000 SBP, although I consider the fact that the econometric model predicts a lower total share than the November 2000 SBP for the period 2005–2007 to reflect the inherent difficulty that such a model has in accurately capturing the "but-for" market share effect of ZFM's introduction of the FreedomLine.



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**Table 2: “But-for” ZFM shares from econometric model and November 2000 SBP**

Fiscal year	Econometric model	November 2000 SBP manual	November 2000 SBP automated	November 2000 SBP Total
Jul–Sept 2000	15.61%	11.1%	0%	11.1%
2001	18.75%	11.1%	1.9%	13.0%
2002	18.61%	10.6%	4.4%	15.0%
2003	21.39%	9.5%	7.5%	17.0%
2004	21.14%	11.0%	9.0%	20.0%
2005	20.13%	11.1%	10.9%	22.0%
2006	18.67%	11.1%	12.2%	23.3%
2007	20.15%	11.1%	13.1%	24.2%
2008	29.87%	11.1%	13.5%	24.6%
Oct 2008–Feb 2009	25.18%	11.1%	13.6%	24.7%

Source: Bates White's calculation based on econometric model (see Appendix A for details).

- (296) Table 8 reports the estimates of lost incremental profits obtained using the shares estimated by the econometric model rather than by the November 2000 SBP.<sup>366</sup> These estimates result in lost profit damages to ZFM over the period July 2000–February 2009 of \$333 million in nominal terms, \$390 million in present value terms using a risk-free rate, and \$439 million in present value terms using ArvinMeritor's cost of debt.

### 11.7. Sensitivity of econometric results to alternative start of conduct period

- (297) As discussed above, there is considerable evidence that Eaton's anticompetitive conduct started before July 2000, *i.e.*, before Eaton's "OEM partnership" period that I have identified as the conduct period using an "indicator" variable in the econometric model above. This evidence of pre-2000 anticompetitive conduct includes Eaton's LTA with Freightliner in February 1999, Eaton's horizontal price-fixing agreement with Mack that began in July 1997, Eaton's various LTAs with Volvo during 1999 and prior, and Eaton's 1996 LTA with International, as discussed above. Thus, I expect that both the ZFM November 2000 SBP and the above econometric model results will understate ZFM's "but-for" market share in the absence of any Eaton anticompetitive conduct, as ZFM's actual market share prior to that time and its expectations for its future market share growth were likely significantly affected by Eaton's anticompetitive conduct prior to July 2000.
- (298) As a sensitivity analysis, I have also estimated the econometric model of ZFM's "but-for" market shares with the conduct period beginning in February 1999, the date of Eaton's LTA

<sup>366</sup> These shares have been allocated to manual and FreedomLine transmissions using the same proportion between these two types of transmissions implied by the forecasts of the November 2000 SBP.

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with Freightliner, rather than beginning in July 2000. As expected, moving the conduct period back into 1999 significantly increases the estimates of ZFM's "but-for" market shares relative to both the ZFM November 2000 SBR and the econometric model calibrated on a conduct period beginning in July 2000. Table 3, below, compares the market shares predicted by ZFM for 2000–2005, the "OEM partnership" econometric model with the conduct period beginning in July 2000, and the econometric model with the conduct period beginning in February 1999. If one were to consider Eaton's anticompetitive conduct to have started in February 1999, the econometric "but-for" shares would increase significantly, particularly during the 2000 – 2005 period, which in turn would also significantly increase the damages as well. While to be conservative, I have not used this approach to estimating ZFM's damages, this sensitivity analysis further supports the reasonableness of the results I have obtained above.

**Table 3: "But-for" ZF Meritor shares from econometric models and November 2000 SBP**

Fiscal year	November 2000 SBP total	Econometric model dummy Jul 2000	Econometric model dummy Feb 1999
Jul–Sept 2000	11.1%	15.61%	17.72%
2001	13.0%	18.75%	21.24%
2002	15.0%	18.61%	20.03%
2003	17.0%	21.39%	23.98%
2004	20.0%	21.14%	24.56%
2005	22.0%	20.13%	25.88%

Source: Bates White's calculation based on econometric model (see Appendix D for details).

### 11.8. ZFM lost profits assuming incremental fixed costs after FY2003

- (299) While using ZFM's "but-for" contribution margin provides a reasonable and standard approach to computing damages, an alternative method for computing damages is to account for the possibility that in order to achieve the estimated "but-for" sales after FY 2003, *i.e.*, after the dissolution of the joint venture, ZFM would have had to incur additional overhead costs. Such incremental overhead costs could include higher levels of operating expenses (engineering and marketing expenses, for example) and higher levels of certain fixed costs, such as the fixed cost component of "burden." I have excluded depreciation, as depreciation is not a cash expense but rather reflects an allocation of a previously incurred capital investment. I do not consider it appropriate to add back in additional overhead costs for the period prior to the dissolution of the joint-venture, as I have seen no evidence to suggest that ZFM's reduced transmission sales during this time period was in any way due to its lack of adequate expenditures on such activities. An estimate of the post-2003 incremental overhead costs that could potentially be included in such an analysis are reported in Table 9.

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- (300) As reported in Table 10, the lost profit damages to ZFM over the period July 2000–February 2009 using this approach are approximately equal to \$170 million in nominal terms, \$203 million in present value terms using a risk-free rate, and \$232 million in present value terms using ArvinMeritor’s cost of debt.

#### **11.9. ZFM lost profits assuming incremental fixed costs throughout FY2000 - FY2009**

- (301) As stated above, while I consider one reasonable approach to estimating damages to be to account for estimated incremental ZFM overhead costs after the dissolution of the ZFM joint-venture in FY2003, I do not consider it appropriate to assume that there would have been incremental “but-for” overhead costs in the period FY2000 – FY2003. Nevertheless, out of an abundance of caution, I have applied the same approach described above in estimating the incremental “but-for” overhead costs in the period FY2004 – FY2009 to also estimate incremental “but-for” overhead costs in the period FY2000 – FY2003. I consider this approach to constitute a lower bound to ZFM’s damages, particularly given the highly conservative “but-for” market shares used in the analysis.
- (302) As reported in Table 11, the lost profit damages to ZFM over the period July 2000–February 2009 using this approach are approximately equal to \$156 million in nominal terms, \$185 million in present value terms using a risk-free rate, and \$212 million in present value terms using ArvinMeritor’s cost of debt.

#### **11.10. Estimates of ZFM lost profits based on Eaton’s actual profits**

- (303) If the total number of trucks built in NAFTA was not affected by Eaton’s anticompetitive conduct, it is reasonable to expect that ZFM’s “but-for” profit margins would have been similar to those earned by Eaton on comparable transmissions. Thus, rather than relying on ZFM’s forecast and actual profitability, the latter of which is clearly affected by Eaton’s anticompetitive conduct, ZFM’s lost profits can also be calculated by applying ZFM’s “but-for” market shares to the actual profits of Eaton’s HD Transmissions division. This is a reasonable approach, as I have seen no evidence to suggest that ZFM would not have been as efficient as Eaton, if ZFM had not been deprived of the opportunity to reach minimum efficient scale by Eaton’s anticompetitive conduct. Since Eaton earns a higher profit margin on its performance transmissions as compared with its linehaul transmissions, and ZFM’s damages are predominantly due to its lost sales of linehaul transmissions, I account for this difference in the relative profitability of Eaton’s product mix in the calculations presented in Table 12 and explained below. While it may be reasonable to apply Eaton’s own contribution margin in determining ZFM’s lost profits on the incremental sales lost due to Eaton’s

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conduct, I have conservatively used Eaton's operating profitability as a benchmark to estimate the operating profits of ZFM in the absence of Eaton's anticompetitive conduct, *i.e.*, I assume that ZFM would have incurred operating and fixed costs consistent with Eaton's cost structure in order to achieve ZFM's "but-for" sales levels under this approach.

- (304) As a first step, I estimate the portion of Eaton's operating profits that are generated by transmissions that are comparable to those produced by ZFM. Although it is reasonable to expect that ZFM would have developed transmissions for the performance market in the absence of Eaton's anticompetitive conduct, for the purpose of this calculation, I focus only on manual and automated manual transmissions used in linehaul applications. Since Eaton does not report operating profits for linehaul and performance transmissions separately, I estimate the share of Eaton's total profits from its HD Transmissions generated by its manual and automated manual linehaul transmissions by taking the average share of Eaton's contribution margin that is attributable to these transmissions in 2006 and 2007. This share is equal to approximately 36%.
- (305) I then use Eaton's share of the linehaul market to calculate the total amount of profits that could be earned in the linehaul market. To obtain the incremental profits that ZFM would have earned in the absence of Eaton's anticompetitive conduct, I then multiply the total operating profits that could be earned in the linehaul market by the incremental share of this market that ZFM would have gained in the absence of Eaton's anticompetitive conduct. As can be seen in Table 12, using this methodology, the amount of incremental operating profits lost by ZFM over the period July 2000–February 2009 as a result of Eaton's anticompetitive conduct is approximately equal to \$217 million in nominal dollars, \$249 million in present value terms using the risk-free interest rate, and \$278 million in present value terms using ArvinMeritor's cost of debt.

#### **11.11. ZFM lost enterprise value**

- (306) The lost profits to ZFM computed over the period July 2000–February 2009 is one component of ZFM's damages. The second component of ZFM's damages can be computed as either the present value of ZFM's future lost profits or, equivalently, the lost enterprise value of ZFM caused by Eaton's anticompetitive conduct, with the lost enterprise value measured as of February 2009. For purposes of this analysis, I have used the lost enterprise value approach to computing this second component of ZFM's damages. A lost enterprise value approach is preferable in this context for the following reasons. First, it avoids unnecessary differences of opinion with regard to the appropriate computation of ZFM's free cash flows, the assumed future rate of growth of ZFM's free cash flows going forward, and the appropriate computation of ZFM's weighted average cost of capital ("WACC") to be applied

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to its future free cash flows. Second, both ArvinMeritor and Eaton are publicly-traded companies and are therefore themselves reasonable “comparables” to use in estimating the enterprise value of ZFM on a “but-for” basis. Third, there is a wide range of other automotive suppliers that could provide similar “comparables” for estimating ZFM’s enterprise value on a “but-for” basis. Fourth, business acquisitions and divestitures are common in the automotive supply industry, and it is thus reasonable to use what is effectively a transaction-based approach in estimating the lost enterprise value of ZFM.

- (307) There are a variety of “multiples” that are applied to a company’s financial results in order to estimate a company’s value. First, it is important to define the appropriate benchmark of value. For purposes of this report, I use the fair market value of the enterprise. The “fair market value” principle is based on “the amount at which property would change hands between a willing seller and a willing buyer when neither is acting under compulsion and when both have reasonable knowledge of the relevant facts.”<sup>367</sup> I use the enterprise value of the company, as that is the appropriate measure for the value of the business harmed by Eaton’s anticompetitive actions. Enterprise value is defined as the market value of equity, plus total debt and preferred equity, less the amount of cash and cash equivalents. This definition of enterprise value is a standard definition that is often used in valuing companies for a broad range of business purposes.
- (308) Second, there are many financial indicators that can be used to derive an enterprise value (“EV”) “multiple” for a company, such as EV/Sales, EV/EBIT,<sup>368</sup> or EV/EBITDA.<sup>369</sup> Generally, I would expect EV/EBIT or EV/EBITDA to provide a reasonably stable and reliable estimate of enterprise value, if reasonably comparable companies or transactions are used to derive the benchmark multiple. I therefore use both EV/EBITDA and EV/EBIT as appropriate multiples to apply to ZFM’s “but-for” EBITDA or EBIT, respectively, depending on the specific financial measure available from the above computations of lost-profits computations. In these computations, I use ZFM’s “but-for” operating profits as equivalent to EBIT and its “but-for” operating profits less depreciation as equivalent to EBITDA. The source of the financial data for all of the publicly traded companies that I have used to derive the multiples used in my analysis is S&P’s Research Insight database (formerly known as Compustat), as discussed in Appendix E.
- (309) The average EV/EBITDA multiple for ArvinMeritor and Eaton for the period 2005–2007 equals 7.68, and their average EV/EBIT multiple for the same period is 12.32.<sup>370</sup> I apply the

<sup>367</sup> American Society of Appraisers, Business Valuation Standards—Definitions.

<sup>368</sup> Earnings before interest and taxes. Operating profit is often used as a reasonable proxy for EBIT.

<sup>369</sup> Earnings before interest, taxes, depreciation, and amortization.

<sup>370</sup> See Appendix E.

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EV/EBITDA multiple of 7.68 to ZFM's average "but-for" EBITDA of \$30 million for FY 2006–2008 (see Table 11). I use a range of years, both for the comparables' multiples and for ZFM's "but for" operating profits to which I will apply these multiples, in order to account for the potentially significant impact of using a specific point in the business cycle as a basis for establishing the "but-for" enterprise value of the ZFM transmission business, particularly given the potential for short-term fluctuations in profits in this industry that may be due to macroeconomic fluctuations. The lost enterprise value estimated using this approach is approximately equal to \$233 million.

- (310) From the lost profits approach based on Eaton's profitability in Section 11.10, above, I have derived an estimate of ZFM's "but-for" EBIT. Since I did not have information to allocate Eaton's depreciation to its linehaul transmissions, I therefore did not use this method to derive an estimate of ZFM's "but-for" EBITDA, although both measures should produce reasonably similar results. Applying ArvinMeritor's and Eaton's average EV/EBIT multiple of 12.32 to ZFM's average FY2006–2008 "but-for" EBIT computed based on Eaton's profitability (see Table 12) results in an estimate of the ZFM lost enterprise value of approximately \$556 million.
- (311) My estimates of ZFM's lost enterprise value caused by Eaton's anticompetitive conduct are therefore in the range of \$233–\$556 million, with a reasonable point estimate being the midpoint of this range, *i.e.*, \$394 million.

#### **11.12. Other approaches to estimate ZFM lost enterprise value**

- (312) In order to test the sensitivity of my results to my use of ArvinMeritor and Eaton as comparables, I have also examined the impact on my analysis of selecting two alternative sets of comparable companies. The first alternative is a set of five companies identified by research analysts at certain investment banks as being comparable to Eaton's "Truck" business segment, which provides a reasonable proxy for the ZFM HD Transmission business. I refer to this alternative set of comparables as the "analyst comparables."
- (313) The second alternative is a set of 11 companies in the S&P Research Insight Database with Global Industrial Classification Standard ("GICS") codes corresponding to the classification codes that I would expect to be reasonably comparable to ZFM. I refer to this set of comparables as the "GICS-based comparables." The screening and selection criteria are described in detail in Appendix E. For both sets of comparables, I computed the average EV/EBITDA multiple for each company over the three year period, and I then computed the median EV/EBITDA multiple across the sample. Table 4 summarizes the results.



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**Table 4: Median enterprise value multiples using alternative comparables**

	EV/EBITDA	EV/EBIT
ArvinMeritor – Eaton	7.68	12.32
Analyst comparables	7.37	11.36
GICS-based comparables	7.64	11.36

- (314) As is clear from the data, the results of all three approaches are remarkable similar, with the EV/EBITDA multiples all in a tight range around 7.37 and 7.68 and the EV/EBIT multiples for the alternative sets both equal to 11.36, compared to the average ArvinMeritor and Eaton EV/EBIT multiple of 12.32. Given the close similarity of the results using the alternative comparables to the results using ArvinMeritor and Eaton as comparables, I conclude that the latter approach is reasonable.
- (315) As still another check on the reasonableness of the lost enterprise valuation approach, I also compared the results of the “multiple” approach to the results that would be obtained if one were to estimate the net present value (NPV) of ZFM’s forward-looking (post-February 2009) “but-for” EBITDA. Rather than deriving a detailed estimate of ZFM’s forward-looking “but-for” EBITDA, I have applied two parameters to its average “but-for” EBITDA of \$30 million for FY 2006–2008: the expected rate of growth of ZFM’s EBITDA in the future; and an appropriate discount rate. With regard to the expected future rate of growth of ZFM’s “but-for” EBITDA, I use the Producer Price Index (“PPI”) for intermediate materials used in durable manufacturing. This PPI increased by approximately 2.64% on a compound annual basis over the period 2006–2008.<sup>371</sup> I therefore assume that ZFM’s average “but-for” FY 2006–2008 EBITDA would grow at that rate on average into the future. With regard to the appropriate discount rate to apply to these future cash flows, according to the 2008 Ibbotson Cost of Capital Yearbook for 2008, the “composite” Weighted Average Cost of Capital (“WACC”) for the “Motor Vehicle and Motor Vehicle Equipment Industry” is 13.34%.<sup>372</sup>
- (316) In order to compute the NPV of a cash flow increasing at constant growth rate, one can simply divide the starting cash flow by the discount rate less the growth rate. In this case, dividing ZFM’s “but-for” average FY 2006–2008 EBITDA of approximately \$30 million by (13.34%–2.64%) provides an NPV of approximately \$284 million. This is \$51 million more than applying the average ArvinMeritor and Eaton EV/EBITDA “multiple” to those same cash flows, discussed above. Alternatively, one can also interpret these results as showing that such an approach to valuing ZFM’s future “but-for” cash flows provides an equivalent

<sup>371</sup> <http://www.bls.gov/news.release/ppi.nr0.htm>.

<sup>372</sup> Computed by Ibbotson’s using the CAPM approach. While Ibbotson also reports alternative approaches, some of which are higher or lower than the CAPM approach, I consider CAPM to provide a reasonable estimate of a company’s WACC.

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estimate of the \$233 million lost enterprise value computed above, even if one were to reduce ZFM's "but-for" EBITDA used as a basis for this computation to approximately \$25 million, rather than the average FY2006–FY2008 ZFM "but-for" EBITDA of \$30 million derived above. Since an estimate of ZFM's lost enterprise value derived by explicitly discounting its future cash flows using a reasonable discount rate will result in a higher estimate of lost enterprise value than I computed above, this further confirms the reasonableness of the "multiple" above approach I use above.

### **11.13. Conclusions: summary of total damages estimates to ZFM transmission business**

- (317) Table 13 reports the range of estimates of the incremental profits lost by ZFM during the July 2000–February 2009 period and the lost enterprise value as of February 2009. As enterprise value is a present value equivalent, one can add the estimate of lost enterprise value to the estimates of ZFM's lost profits in present value terms based on either the risk-free rate or the ArvinMeritor cost of debt to derive a range of total damage estimates.
- (318) As can be seen in Table 13, my estimates of ZFM's total damages are between \$580 million and \$785 million when using the risk-free rate and between \$606 million and \$834 million when using ArvinMeritor's cost of debt. The average of these estimates is equal to \$677 million when using the risk-free interest rate and \$713 million when using ArvinMeritor's cost of debt. As I consider ArvinMeritor's cost of debt to be the appropriate interest rate to use in the present value calculations, I conclude that a reasonable estimate of the total damages to ZFM's HD Transmission business caused by Eaton's anticompetitive conduct is \$713 million.

### **11.14. Damages to ZFM clutch business**

- (319) While the focus of my analysis of Eaton's anticompetitive conduct relates to the harm to competition and consumers in the relevant markets for HD Transmissions in linehaul and performance applications, it is also important to recognize that ZFM suffered financial damages not just to its HD Transmission business but also to its clutch business. ZFM's clutch business was an integral part of its manufacturing, sales, and marketing activities, as is evident in ZFM's various management reports, including the November 2000 SBP that I use as the basis for my estimates of the damages to its transmission business, above.<sup>373</sup>

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<sup>373</sup> Cite to SBP



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- (320) There are two primary reasons to expect that ZFM's clutch business suffered damages as a result of Eaton's anticompetitive conduct in the HD Transmission markets discussed above. First, in several of Eaton's LTAs with the OEMs, in addition to its target penetration rates for its transmission sales, there were also generally accompanying target penetration rates for its clutch sales, sometimes in excess of the already very high penetration rates for transmissions. As with its transmissions penetration shares, Eaton offered the OEMs higher rebates in return for meeting or exceeding the specified share thresholds for Eaton clutches.<sup>374</sup> The terms with regard to clutches were not part of separate agreements with the OEMs, but rather were embedded in Eaton's LTAs discussed above, encompassing both clutches and transmissions simultaneously. Just as the terms of Eaton's LTAs had a negative impact on ZFM sales of transmissions, the evidence clearly shows that the same terms as applied to clutches also had a negative impact on ZFM sales of clutches.
- (321) The second reason to expect Eaton's LTAs to have damaged ZFM's clutch business is that, while OEMs and end customers can use different clutches with a given transmission, from an economic perspective, clutches and transmissions are "complements" in consumption. A truck with a manual transmission will also require a clutch. If a transmission manufacturer also sells a clutch that has been engineered to be compatible with its transmissions, if its clutch is priced competitively relative to competing clutches, and if its clutch is otherwise comparable in terms of functionality and quality to competing clutches, it is reasonable to expect the transmission manufacturer's sales of clutches to be positively correlated with its sales of transmissions. As the price of clutches is considerably lower than the price of a corresponding transmission (generally in the range of 10% of transmission prices), I would not expect a manufacturer's clutch sales to determine its transmission sales. Conversely, however, I would expect the correlation between transmission and clutch sales to reflect the likelihood that some significant fraction of a manufacturer's transmission sales will determine its volume of clutch sales. Thus, even if Eaton's LTAs had made *no* mention of clutches, I would expect them to have had a significant negative impact on ZFM's clutch sales, as their exclusionary impact limiting ZFM's ability to sell transmissions would have also reduced ZFM's clutch sales.
- (322) I have used ZFM's November 2000 SBP in order to compute a simple correlation between its expected sales of its manual G-platform transmission sales and clutch sales for FY01 through FY05. The correlation between the forecasts of the number of units of clutches and transmissions is 0.80, and the correlation of the forecast clutch and transmission revenues is 0.92—both of which indicate that they are, as expected, highly correlated, at least on a forecast basis. I also computed this same correlation using ZFM's actual sales of

<sup>374</sup> In the case of Volvo Mack, part of the rebates also takes the form of annual price reductions conditional on reaching certain penetration rate threshold.

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transmissions and clutches for the entire time period for which these data are available, *i.e.*, FY1997–FY2002, and the correlation is even higher: 0.92 in terms of units and 0.97 in terms of revenues.

- (323) Given this high correlation between clutch revenues and transmission revenues, rather than explicitly computing ZFM's lost profits and lost enterprise value with regard to clutches in the same way as the damages calculations above, I have used the correlations to estimate a factor of proportionality to apply to the above ZFM transmission damages in order to derive an estimate of the damages to ZFM's clutch business. Not only is this approach relatively straight-forward computationally, but it also appropriately reflects the fact that ZFM's clutch damages scale to the amount of damages to its transmission business, rather than being independent of the latter.
- (324) In order to use this correlation to estimate ZFM's damages to clutches, I have run a simple regression of ZFM's forecast of clutch sales on ZFM's forecast of manual transmission sales for the period FY2001–FY2005. The resulting coefficient of 0.27 implies that for every \$1,000 of lost ZFM manual transmission sales due to Eaton's anticompetitive conduct, there will be approximately  $0.27 \times \$1,000 = \$270$  of lost ZFM clutch sales. In order to translate this result into an estimate of ZFM's lost profits on these lost clutch sales, I take into account the fact that the profit margin earned on clutches is, on average, significantly less than the profit margin earned on transmissions. For example, in the November 2000 SBP, ZFM reported a contribution margin in FY2000 of 32% for transmissions, compared with 22% for clutches;<sup>375</sup> thus, clutches were on average 69% as profitable as transmissions. Therefore, for every \$1,000 of lost ZFM profits on manual transmissions, I estimate lost profits on clutches to be  $0.27 \times 0.69 = 18.6\% \times \$1,000 = \$186$ .<sup>376</sup> In the damage estimates above, approximately 46.1% of the lost profits are due to lost sales of ZFM's manual transmissions, rather than to lost sales of the FreedomLine. Applying these percentages to the mid-point damage estimate for ZFM's transmission business of \$713 million implies that ZFM's lost profits and lost enterprise value attributable to the impact of Eaton's anticompetitive conduct on its clutch business would be  $\$713 \text{ million} \times 46.1\% \times 18.6\% = \$61 \text{ million}$ . While I have not added this figure to my above estimates of the damages to the ZFM Transmissions business, it provides further evidence that my above estimate of the damages to ZFM from Eaton's anticompetitive conduct are highly conservative.

<sup>375</sup> Cite SBP, pp. 6–7.

<sup>376</sup> To clarify the algebra: if  $(\text{Clutch Revenue}) = 0.27 \times (\text{Transmission Revenue})$ , and  $(\text{Clutch Profit} / \text{Clutch Revenue}) = 0.69 \times (\text{Transmission Profit} / \text{Transmission Revenue})$ , then by multiplying the two equations I get  $(\text{Clutch Profit}) = 0.27 \times 0.69 \times (\text{Transmission Profit})$ .

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**Table 5: ZF Meritor's incremental revenue**

Line	Incremental revenue	FY 2000 (since Jul)	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009 (until Feb)	Total 2000-09
Manual transmissions (G_platform)												
1	Forecasted ZF Meritor net sales	NA	\$66,122,000	\$66,860,000	\$57,398,000	\$80,623,000	\$89,055,000	\$89,055,000	\$89,055,000	\$89,055,000	\$37,106,250	\$664,329,250
2	Forecasted ZF Meritor units	NA	19,348	19,001	15,202	22,008	24,399	NA	NA	NA	NA	99,958
3	Forecasted total number of trucks	NA	175,000	180,000	160,000	200,000	220,000	NA	NA	NA	NA	935,000
4	ZF Meritor's forecasted share (L. 2 / L. 3)	11.1%	11.1%	10.6%	9.5%	11.0%	11.1%	11.1%	11.1%	11.1%	11.1%	NA
5	Actual total number of trucks	51,076	150,169	169,433	164,136	235,026	323,812	351,885	245,976	193,964	13,267	1,898,744
6	But-for units based on actual number of trucks (L. 4 * L. 5)	5,647	16,603	17,886	15,595	25,862	35,912	39,026	27,280	21,511	1,471	206,793
7	Actual units	5,474	17,137	19,195	10,605	9,374	7,704	6,909	1,517	-	-	77,915
8	Incremental units in but-for world (L. 6 - L. 7)	173	-	-	4,990	16,488	28,208	32,117	25,763	21,511	1,471	130,722
9	Average but-for price	\$3,418	\$3,418	\$3,519	\$3,776	\$3,663	\$3,650	\$3,650	\$3,650	\$3,650	\$3,650	NA
10	Incremental revenue in but-for world (L. 8 * L. 9)	\$591,101	\$-	\$-	\$18,840,573	\$60,402,266	\$102,958,452	\$117,223,981	\$94,033,001	\$78,515,746	\$5,370,455	\$477,935,575
Automated manual transmissions (FreedomLine)												
11	Forecasted ZF Meritor net sales	NA	\$15,935,000	\$41,079,000	\$59,300,000	\$88,691,000	\$118,083,000	\$118,083,000	\$118,083,000	\$118,083,000	\$49,201,250	\$726,538,250
12	Forecasted ZF Meritor units	NA	3,400	8,000	12,000	18,000	24,000	NA	NA	NA	NA	65,400
13	Forecasted total number of trucks	NA	175,000	180,000	160,000	200,000	220,000	NA	NA	NA	NA	935,000
14	ZF Meritor's forecasted share (L. 12 / L. 13)	0%	1.9%	4.4%	7.5%	9.0%	10.9%	12.2%	13.1%	13.5%	13.6%	NA
15	Actual total number of trucks	51,076	150,169	169,433	164,136	235,026	323,812	351,885	245,976	193,964	13,267	1,898,744
16	But-for units based on actual number of trucks (L. 14 * L. 15)	-	2,918	7,530	12,310	21,152	35,325	42,895	32,124	26,243	1,805	182,303
17	Actual units	-	62	513	3,511	794	-	-	-	-	-	4,880
18	Incremental units in but-for world (L. 16 - L. 17)	-	2,856	7,017	8,799	20,358	35,325	42,895	32,124	26,243	1,805	177,423
19	Average but for price	\$-	\$4,687	\$5,135	\$4,942	\$4,927	\$4,920	\$4,920	\$4,920	\$4,920	\$4,920	NA
20	Incremental revenue in but-for world (L. 18 * L. 19)	\$-	\$13,383,381	\$36,033,244	\$43,482,713	\$100,311,196	\$173,803,147	\$211,047,687	\$158,056,386	\$129,120,460	\$8,882,573	\$874,120,788
All transmissions												
21	Total incremental revenue in but for world (L. 10 + L. 20)	\$591,101	\$13,383,381	\$36,033,244	\$62,323,287	\$160,713,462	\$276,761,599	\$328,271,668	\$252,089,387	\$207,636,206	\$14,253,028	\$1,352,056,362

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**Table 6: ZF Meritor's incremental costs**

Line	Incremental variable cost	FY 2000 (since Jul)	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009 (until Feb)	Total 2000-09
Manual transmissions (G_platform)												
1	Manufacturing cost (standard cost + variances)	NA	\$54,295,000	\$56,193,000	\$48,269,000	\$66,881,000	\$73,256,000	\$73,256,000	\$73,256,000	\$73,256,000	\$30,523,333	\$549,185,333
2	Burden (including depreciation)	NA	\$14,993,000	\$14,150,000	\$11,460,000	\$15,242,000	\$16,220,000	\$16,220,000	\$16,220,000	\$16,220,000	\$6,758,333	\$127,483,333
3	Percentage of burden that is fixed	NA	70%	88%	87%	76%	78%	78%	78%	78%	78%	NA
4	Fixed burden (L. 2 * L. 3)	NA	\$10,566,477	\$12,501,833	\$10,005,697	\$11,658,716	\$12,708,807	\$12,708,807	\$12,708,807	\$12,708,807	\$5,295,336	\$100,863,286
5	of which Depreciation	NA	\$3,214,177	\$4,715,592	\$4,436,199	\$3,912,790	\$2,571,526	\$2,571,526	\$2,571,526	\$2,571,526	\$1,071,469	\$27,636,332
6	Variable cost (L. 1 - L. 4)	NA	\$43,728,523	\$43,691,167	\$38,263,303	\$55,222,284	\$60,547,193	\$60,547,193	\$60,547,193	\$60,547,193	\$25,227,997	\$448,322,047
7	Forecasted units in SBP	NA	19,348	19,001	15,202	22,008	24,399	24,399	24,399	24,399	10,166	183,321
8	Forecasted per unit variable cost (L. 6 / L. 7)	\$2,260	\$2,260	\$2,299	\$2,517	\$2,509	\$2,482	\$2,482	\$2,482	\$2,482	\$2,482	\$2,446
9	Incremental units (From L. 8 in Table 1)	173	-	-	4,990	16,488	28,208	32,117	25,763	21,511	1,471	130,722
10	Incremental variable cost (L. 8 * L. 9)	\$390,914	\$-	\$-	\$12,559,716	\$41,372,203	\$69,999,947	\$79,698,872	\$63,931,663	\$53,381,708	\$3,651,294	\$324,986,316
Automated Manual transmissions (FreedomLine)												
11	Manufacturing cost (standard cost + variances)	NA	\$18,829,000	\$36,936,000	\$51,557,000	\$75,611,000	\$100,849,000	\$100,849,000	\$100,849,000	\$100,849,000	\$42,020,417	\$628,349,417
12	Burden (including depreciation)	NA	\$855,000	\$4,327,000	\$5,558,000	\$6,959,000	\$9,344,000	\$9,344,000	\$9,344,000	\$9,344,000	\$3,893,333	\$58,968,333
13	Percentage of burden that is fixed	NA	70%	88%	87%	76%	78%	78%	78%	78%	78%	NA
14	Fixed burden (L. 12 * L. 13)	NA	\$602,570	\$3,822,999	\$4,852,676	\$5,322,989	\$7,321,276	\$7,321,276	\$7,321,276	\$7,321,276	\$3,050,532	\$46,936,868
15	of which Depreciation	NA	\$564,823	\$1,985,408	\$3,501,801	\$3,200,210	\$2,529,474	\$2,529,474	\$2,529,474	\$2,529,474	\$1,053,947	\$20,424,085
16	Variable cost (L. 11 - L. 14)	NA	\$18,226,430	\$33,113,001	\$46,704,324	\$70,288,011	\$93,527,724	\$93,527,724	\$93,527,724	\$93,527,724	\$38,969,885	\$581,412,549
17	Forecasted units in SBP	NA	3,400	8,000	12,000	18,000	24,000	24,000	24,000	24,000	10,000	147,400
18	Forecasted per unit variable cost (L. 16 / L. 17)	\$5,361	\$5,361	\$4,139	\$3,892	\$3,905	\$3,897	\$3,897	\$3,897	\$3,897	\$3,897	\$3,944
19	Incremental units (From L. 18 in Table 1)	-	2,856	7,017	8,799	20,358	35,325	42,895	32,124	26,243	1,805	177,423
20	Incremental variable cost	\$-	\$15,307,891	\$29,045,713	\$34,246,724	\$79,497,068	\$137,660,907	\$167,160,471	\$125,188,674	\$102,269,953	\$7,035,449	\$697,412,849
All transmissions												
21	Total incremental variable cost	\$390,914	\$15,307,891	\$29,045,713	\$46,806,440	\$120,869,271	\$207,660,854	\$246,859,343	\$189,120,337	\$155,651,661	\$10,686,742	\$1,022,399,165

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**Table 7: ZF Meritor's incremental profit**

Line	Incremental gross profit	FY 2000 (since Jul)	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009 (until Feb)	Total 2000–09
Incremental profits in current dollars												
1	Incremental revenue	\$591,101	\$13,383,381	\$36,033,244	\$62,323,287	\$160,713,462	\$276,761,599	\$328,271,668	\$252,089,387	\$207,636,206	\$14,253,028	\$1,352,056,362
2	Incremental variable cost	\$390,914	\$15,307,891	\$29,045,713	\$46,806,440	\$120,869,271	\$207,660,854	\$246,859,343	\$189,120,337	\$155,651,661	\$10,686,742	\$1,022,399,165
3	Incremental gross profit in current dollars (L. 1 - L. 2)	\$200,188	\$-	\$6,987,531	\$15,516,847	\$39,844,191	\$69,100,745	\$81,412,325	\$62,969,050	\$51,984,545	\$3,566,286	\$331,581,708
Incremental profits 2009 dollars												
4	Incremental profits in 2009 dollars (Risk free rate)	\$322,609	\$-	\$9,798,158	\$19,729,943	\$49,619,229	\$82,198,909	\$94,501,714	\$69,722,751	\$54,455,777	\$3,588,604	\$383,937,693
5	Incremental profits in 2009 dollars (ArvinMeritor cost of debt)	\$357,239	\$-	\$11,413,258	\$23,193,569	\$55,995,657	\$94,353,196	\$109,145,232	\$76,627,114	\$56,476,225	\$3,617,609	\$431,179,098

**Table 8: Calculation of damages based on econometric estimate of ZF Meritor's but-for shares**

Line	Incremental gross profit	FY 2000 (since Jul)	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009 (until Feb)	Total 2000–09
Incremental profits in current dollars												
1	Incremental revenue	\$8,540,235	\$42,710,853	\$55,873,188	\$93,226,758	\$172,012,469	\$250,852,497	\$255,952,197	\$206,587,702	\$247,958,925	\$14,297,318	\$1,348,012,142
2	Incremental variable cost	\$5,647,922	\$37,621,903	\$43,430,468	\$69,307,208	\$129,245,079	\$188,388,954	\$191,996,709	\$154,019,635	\$184,438,640	\$10,634,737	\$1,014,731,256
3	Incremental gross profit in current dollars (L. 1 - L. 2)	\$2,892,314	\$5,088,950	\$12,442,720	\$23,919,550	\$42,767,390	\$62,463,543	\$63,955,487	\$52,568,066	\$63,520,285	\$3,662,581	\$333,280,886
Incremental profits 2009 dollars												
4	Incremental gross profit in 2009 dollars (Risk free rate)	\$4,661,051	\$7,725,124	\$17,447,613	\$30,414,128	\$53,259,579	\$74,303,614	\$74,238,184	\$58,206,217	\$66,539,901	\$3,685,502	\$390,480,913
5	Incremental gross profit in 2009 dollars (ArvinMeritor cost of debt)	\$5,161,385	\$9,966,121	\$20,323,627	\$35,753,381	\$60,103,819	\$85,290,469	\$85,741,766	\$63,970,144	\$69,008,701	\$3,715,290	\$439,034,702

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**Table 9: ZF Meritor's incremental but-for overhead costs assuming continuation of the joint venture**

Line	Incremental overhead costs	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009 (until Feb)	Total FY 2004–09
Overhead costs in but-for world (all transmissions)								
1	But-for fixed burden (including depreciation)	\$16,981,705	\$20,030,082	\$20,030,082	\$20,030,082	\$20,030,082	\$8,345,868	\$105,447,902
2	But-for operating expenses	\$20,634,000	\$23,181,000	\$23,181,000	\$23,181,000	\$23,181,000	\$9,658,750	\$123,016,750
3	Total but-for overhead costs	\$37,615,705	\$43,211,082	\$43,211,082	\$43,211,082	\$43,211,082	\$18,004,618	\$228,464,652
Actual Overhead costs (all transmissions)								
4	Actual fixed burden (including depreciation)	\$12,326,820	\$7,846,000	\$7,363,000	\$1,070,000	\$-	\$-	\$28,605,820
5	Actual operating expenses	\$5,781,313	\$2,851,000	\$1,134,000	\$115,000	\$-	\$-	\$9,881,313
6	Total actual overhead costs	\$18,108,133	\$10,697,000	\$8,497,000	\$1,185,000	\$-	\$-	\$38,487,133
Incremental overhead costs (all transmissions)								
7	Incremental fixed burden (including depreciation)	\$4,654,885	\$12,184,082	\$12,667,082	\$18,960,082	\$20,030,082	\$8,345,868	\$76,842,082
8	Incremental operating expenses	\$14,852,687	\$20,330,000	\$22,047,000	\$23,066,000	\$23,181,000	\$9,658,750	\$113,135,437
9	Total incremental overhead costs	\$19,507,571	\$32,514,082	\$34,714,082	\$42,026,082	\$43,211,082	\$18,004,618	\$189,977,519

**Table 10: ZF Meritor's incremental profit accounting for the incremental cash overhead required for continuation of the joint venture**

Line	Incremental profit accounting for incremental cash overhead	FY 2000 (since Jul)	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009 (until Feb)	Total 2000–09
Incremental profits in current dollars												
1	Incremental gross profit in current dollars	\$200,188	\$-	\$6,987,531	\$15,516,847	\$39,844,191	\$69,100,745	\$81,412,325	\$62,969,050	\$51,984,545	\$3,566,286	\$331,581,708
2	Incremental overhead costs	\$-	\$-	\$-	\$-	\$12,846,411	\$27,738,082	\$29,969,082	\$37,134,082	\$38,110,082	\$15,879,201	\$161,676,942
3	Incremental net operating profit	\$200,188	\$-	\$6,987,531	\$15,516,847	\$26,997,780	\$41,362,663	\$51,443,243	\$25,834,968	\$13,874,463	\$(12,312,915)	\$169,904,766
Incremental profits 2009 dollars												
4	Incremental profit in 2009 dollars (risk free rate)	\$322,609	\$-	\$9,798,158	\$19,729,943	\$33,621,187	\$49,203,026	\$59,714,234	\$28,605,879	\$14,534,024	\$(12,389,969)	\$203,139,091
5	Incremental profit in 2009 dollars (ArvinMeritor cost of debt)	\$357,239	\$-	\$11,413,258	\$23,193,569	\$37,941,752	\$56,478,399	\$68,967,256	\$31,438,604	\$15,073,274	\$(12,490,111)	\$232,373,238

Note: Incremental overhead costs prior to the dissolution of the joint venture are excluded

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**Table 11: ZF Meritor's incremental EBITDA assuming continuation of the joint venture**

Line	Incremental EBITDA	FY 2000 (since Jul)	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009 (until Feb)	Total 2000-09
Incremental profits in current dollars												
1	Incremental gross profit in current dollars	\$200,188	\$-	\$6,987,531	\$15,516,847	\$39,844,191	\$69,100,745	\$81,412,325	\$62,969,050	\$51,984,545	\$3,566,286	\$331,581,708
2	Incremental overhead costs (excluding depreciation)	\$(1,556,338)	\$(1,506,952)	\$7,034,351	\$10,086,947	\$12,846,411	\$27,738,082	\$29,969,082	\$37,134,082	\$38,110,082	\$15,879,201	\$175,734,949
3	Incremental EBITDA	\$1,756,526	\$1,506,952	\$(46,820)	\$5,429,900	\$26,997,780	\$41,362,663	\$51,443,243	\$25,834,968	\$13,874,463	\$(12,312,915)	\$155,846,759
Incremental profits 2009 dollars												
4	Incremental profit in 2009 dollars (risk free rate)	\$2,830,695	\$2,287,583	\$(65,653)	\$6,904,213	\$33,621,187	\$49,203,026	\$59,714,234	\$28,605,879	\$14,534,024	\$(12,389,969)	\$185,245,219
5	Incremental profit in 2009 dollars (ArvinMeritor cost of debt)	\$3,134,552	\$2,951,192	\$(76,475)	\$8,116,260	\$37,941,752	\$56,478,399	\$68,967,256	\$31,438,604	\$15,073,274	\$(12,490,111)	\$211,534,703

**Table 12: ZF Meritor's lost profit based on Eaton's operating profit**

Line	ZF Meritor's lost profit based on Eaton's operating profit	FY 2000 (since Jul)	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009 (until Feb)	Total 2000-09
Incremental profits in current dollars												
1	Eaton's profits from heavy duty transmissions (all product types)	\$17,375,250	\$(75,828,000)	\$37,419,000	\$84,245,000	\$188,906,000	\$294,946,000	\$354,000,000	\$251,371,103	\$118,103,351	\$49,209,730	\$1,319,747,434
2	Eaton's profits in linehaul market (36% of total)	\$6,255,090	\$(27,298,080)	\$13,470,840	\$30,328,200	\$68,006,160	\$106,180,560	\$127,440,000	\$90,493,597	\$42,517,206	\$17,715,503	\$475,109,076
3	Eaton's share of linehaul market	78%	77%	76%	84%	92%	95%	96%	98%	100%	100%	NA
4	Available profits in linehaul market	\$8,000,987	\$(35,520,001)	\$17,658,916	\$36,289,001	\$74,155,615	\$111,413,780	\$132,705,668	\$91,872,798	\$42,517,206	\$17,715,503	\$496,809,474
5	ZF Meritor's but-for share of linehaul market	23%	26%	31%	33%	38%	43%	47%	59%	60%	60%	NA
6	ZF Meritor's actual share of linehaul market	22%	23%	24%	16%	8%	5%	4%	2%	0%	0%	NA
7	ZF Meritor's loss in linehaul market share	1%	3%	7%	16%	30%	39%	43%	57%	60%	60%	NA
8	ZF Meritor's lost profits in current dollars	\$64,758	\$(1,120,531)	\$1,220,923	\$5,873,932	\$22,323,477	\$43,157,194	\$57,169,679	\$52,629,045	\$25,480,539	\$10,650,431	\$217,449,447
Incremental profits 2009 dollars												
9	ZF Meritor's lost profits in 2009 dollars (Risk free rate)	\$104,359	\$(1,700,988)	\$1,712,020	\$7,468,808	\$27,800,131	\$51,337,714	\$66,361,360	\$58,273,736	\$26,691,828	\$10,717,081	\$248,766,050
10	ZF Meritor's lost profits in 2009 dollars (ArvinMeritor cost of debt)	\$115,561	\$(2,194,431)	\$1,994,225	\$8,779,970	\$31,372,648	\$58,928,731	\$76,644,388	\$64,044,349	\$27,682,163	\$10,803,702	\$278,171,306



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**Table 13: Summary of total damages**

Approach	Present value based on risk-free rate			Present value based on ArvinMeritor's cost of debt		
	2000–09	Lost EV	Total damages	2000–09	Lost EV	Total damages
ZF Meritor's incremental gross profit (Table 7)	\$383,937,693	\$394,487,159	\$778,424,852	\$431,179,098	\$394,487,159	\$825,666,257
Econometric-based incremental gross profit (Table 8)	\$390,480,913	\$394,487,159	\$784,968,072	\$439,034,702	\$394,487,159	\$833,521,862
ZF Meritor's incremental operating profit accounting for incremental overhead (Table 10)	\$203,139,091	\$394,487,159	\$597,626,251	\$232,373,238	\$394,487,159	\$626,860,398
ZF Meritor's incremental EBITDA (Table 11)	\$185,245,219	\$394,487,159	\$579,732,379	\$211,534,703	\$394,487,159	\$606,021,862
ZF Meritor's lost profits based on Eaton's operating profit (Table 12)	\$248,766,050	\$394,487,159	\$643,253,209	\$278,171,306	\$394,487,159	\$672,658,466
<b>Average</b>	<b>\$282,313,793</b>	<b>\$394,487,159</b>	<b>\$676,800,953</b>	<b>\$318,458,610</b>	<b>\$394,487,159</b>	<b>\$712,945,769</b>

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A handwritten signature in black ink, appearing to read 'D. W. DeRamus', with a long horizontal flourish extending to the right.

February 17, 2009

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David W. DeRamus, Ph.D.

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Date

## **12. Appendix A: CV of David W. DeRamus, Ph.D.**

### **12.1. Summary of experience**

David W. DeRamus, Ph.D. is a Partner and founding member of Bates White, LLC. Dr. DeRamus specializes in economic and financial analysis, quantitative modeling, antitrust analysis, pricing analysis, product liability forecasting, and valuation. Dr. DeRamus has an extensive background in industrial organization, international economics, antitrust economics, microeconomics, finance, financial modeling, and statistical analysis.

### **12.2. Areas of expertise**

- Antitrust
- Energy
- Estimation of damages in commercial litigation
- Econometric and microsimulation modeling
- Pricing analysis

### **12.3. Selected antitrust and general litigation experience**

- Served as consulting expert on antitrust, pricing, and exclusionary conduct issues related to agricultural products.
- Submitted expert testimony in a major price-fixing case involving feed additives on behalf of direct action opt-out plaintiffs. Issues include establishment of liability, estimation of damages, analysis of industry structure, analysis of financial performance, and other pricing-related issues.
- Submitted expert testimony on behalf of indirect purchaser plaintiffs in class certification proceedings in a major price-fixing case involving feed additives.
- Submitted testimony on behalf of Constellation Energy Commodities Group, Inc. in a complaint proceeding before FERC (Docket No. EL07-47-000) brought by the Illinois Attorney General against various participants in the Illinois Auction for electric power supplies (held in September 2006). Analyzed issues related to the competitiveness of the

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auction structure, market concentration, the ability of the participants to exercise market power, and allegations of collusion.

- Served as consulting expert on behalf of multiple defendants in several large cases related to alleged market manipulation in financial markets.
- Served as consulting expert on behalf of plaintiffs for monopolization cases involving the computer software industry. Assisted with the development of overall case strategy and preparation of economic analysis used in legal filings, analyzed software pricing issues, investigated and reviewed allegations of anticompetitive behavior, prepared damage estimates, submitted damage reports to clients, and assisted with settlement negotiations.
- Submitted expert testimony in a merger-related dispute in the oil and gas industry. Testimony involved the valuation of a potential environmental liability/toxic tort arising from oil and gas operations, including an assessment of the materiality of the liability to the proposed merger.
- Submitted expert testimony on behalf of Duke Energy in FERC proceedings (Docket Nos. EL00-95-075 and EL00-98-063) related to the California power markets during 2000–2001 and allegations of improper bidding behavior. Analyzed detailed data on individual bids and plant-level generation, performed statistical analysis of “physical” and “economic” capacity withholding, analyzed financial market data, examined alleged evidence of manipulative trading strategies, and assessed evidence of coordinated behavior.
- Submitted expert testimony on behalf of Duke Energy in response to a FERC Show Cause Order (Docket No. EL03-152-000) relating to alleged “gaming” behavior in the California power markets.
- Assessed reliability of statistical study related to pricing accuracy for a large retailer. Analyzed issues related to overall study methodology, sampling bias, and quantification of harm to consumers.
- Submitted expert testimony involving the estimation of damages resulting from defamation in the travel retail industry. Quantified lost profits and increased operating costs attributable to harm to reputation and tradename in luxury goods retailing business.
- In a disputed acquisition, analyzed value of transaction attributable to pharmacy referrals for patients in long-term care facilities.

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- As consulting expert, provided economic analyses related to antitrust issues involving the electric utility industry. Analyzed prices, load patterns, capacity issues, outages, bidding patterns, and allegations of anticompetitive behavior.
- Provided project oversight for estimation of damages in patent infringement case in the financial services industry. Damages estimated based on a reasonable royalty methodology.
- Estimated value of a wide range of potential liabilities for a remainder trust established by a former manufacturer of food products.
- Estimated the future asbestos liability of several companies (public and private) for investment research firms and potential acquirers as due diligence. Analyzed the litigation risks faced by the companies, insurance coverage issues, potential consequences of other developments in the asbestos litigation environment, and financial reporting issues.
- Provided consulting expert services in a major government contract dispute. Assessed the economics of a development contract with defense aerospace companies. Analyzed the contractors' financial performance, financial viability, bankruptcy risks, potential financing sources, project cash-flows, and the impact of contract termination.
- Submitted expert testimony in government procurement litigation matter involving office productivity software. Analyzed financial costs and benefits of software standardization initiative, reviewed product comparisons, analyzed data on software installation and use, evaluated claims regarding alleged product integration and standardization advantages, and analyzed anticompetitive consequences of government procurement decisions.
- In a major tax dispute, quantified the impact of a private-label credit card on a large retailer's sales and profits. Developed a robust statistical model to estimate the amount and duration of benefits of retailers' promotional and advertising programs associated with the credit card program. Created extensive database for model estimation using point-of-sale data, credit card data, advertising information, and customer demographic information. Tax dispute resolved in favor of the client based on this analysis.
- Developed a state-of-the-art microsimulation model for estimating the future liability of former asbestos manufacturers from personal injury lawsuits. Developed several financial cash-flow models to determine long-term viability of product liability settlement trusts.
- In a contract dispute, developed an analysis of bilateral monopoly power used to estimate damages.

**12.4. Selected energy litigation and regulatory experience**

- Submitted testimony on behalf of the NRG Companies in FERC proceedings (Docket No. ER08-1209-\_\_\_\_) related to the proposal by ISO New England Inc. and the New England Power Pool Participants Committee to compensate rejected Dynamic and Static De-List Bids in the ISO-NE Forward Capacity Auction.
- Submitted testimony on behalf of Milford Power Company, LLC in FERC proceedings (Docket No. ER99-4102-\_\_\_\_) related to the Commission's generation market power screens as applicable to Milford's market-based rate authority.
- Testified on behalf of the New York Power Authority in FERC proceedings (Docket No. ER06-456-000, et al.) related to the proposal by PJM Interconnection, L.L.C. to allocate cost responsibility for certain transmission network upgrades included in the baseline PJM Regional Transmission Expansion Plan to merchant transmission projects that interconnect with the PJM transmission network.
- Submitted testimony on behalf of Southaven Power LLC and Kelson Energy III LLC in FERC proceedings (Docket No. EC08-\_\_\_\_-000) related to potential market power issues arising from Kelson's proposed acquisition of the Southaven electric generation facility. Submitted testimony on behalf of Kelson Energy III LLC in FERC Docket No. ER08-\_\_\_\_-000 related to the Commission's generation market power screens as applicable to Kelson's application for market-based rate authority.
- Submitted comments in proceedings before the Federal Energy Regulatory Commission (FERC) (Docket Nos. RM07-19-000 and AD07-7-000) related to "Wholesale Competition in Regions with Organized Electric Markets" (*see* "Comments of the Electric Power Supply Association"). Analyzed economic issues related to FERC's demand response proposals.
- Testified on behalf of Tenaska and Coral Power in proceedings before the Public Utility Commission of Texas (PUC Docket No. 33687) related to the application by Entergy Gulf States, Inc. of its "Transition to Competition Plan." Analyzed issues related to Entergy's business strategy, cost-benefit analysis, cost allocation, cross-subsidization, and potential harm to competition.
- Testified on behalf of Shell Trading Gas and Power Company and Calpine Corp. in proceedings before the Federal Energy Regulatory Commission (FERC) (Docket No. ER97-4166-015, EL04-124-000, et al.) related to the application by the Southern Companies (Southern Company Energy Marketing, Inc. and Southern Company Services, Inc.) for market based rate authority. Analyzed issues related to the appropriate

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implementation of the Commission's Delivered Price Test, generation market power, Southern Companies' transmission network, barriers to entry, and affiliate preferences.

- Submitted testimony on behalf of Occidental Chemical Company in FERC proceedings (Docket No. EC07-70-000) evaluating the proposed acquisition of jurisdictional assets of Calcasieu Power, LLC by Entergy Gulf States, Inc. Analyzed issues related to the impact of the acquisition on market concentration and the ability of the applicant to exercise market power.
- Testified on behalf of the Texas Industrial Energy Consumers in proceedings before the Public Utility Commission of Texas (SOAH Docket No. 473-06-2536 and PUC Docket No. 32766) related to the retail electric power rates charged by Southwestern Public Service Company. Analyzed issues associated with the appropriate allocation of average system fuel costs and cross-subsidization.
- Testified on behalf of BP Canada Energy Marketing Corp. and IGI Resources, Corp. in FERC proceedings (Docket No. RP06-407) related to the application by Gas Transmission Northwest Corporation for market-based rate authority and flexible services rates for certain transportation services provided by the GTN natural gas pipeline.
- Testified on behalf of Occidental Permian Ltd. and Occidental Power Marketing, L.P. in FERC proceedings (Docket No. EL05-19-002 and ER05-168-001) related to the wholesale electric power rates charged by Southwestern Public Service Company. Analyzed issues associated with the appropriate allocation of average system fuel costs and cross-subsidization.
- Submitted testimony on behalf of Occidental Permian Ltd. and Occidental Power Marketing, L.P. in FERC proceedings (Docket No. ER01-205-009, et al.) related to the application by Southwestern Public Service Company for market-based rate authority. Analyzed issues related to generation market power and affiliate abuse.
- Submitted testimony on behalf of Calpine Corp. in FERC proceedings (Docket No. ER05-1065-000) and testified in Louisiana Public Service Commission proceedings (Docket No. U-28155) related to the application by Entergy Services, Inc., Entergy Louisiana, Inc., and Entergy Gulf States, Inc. to establish an Independent Coordinator of Transmission in the Entergy control area. Analyzed issues related to the functions to be performed by the ICT, Entergy's transmission pricing proposal, and its Weekly Procurement Process proposal.
- Submitted testimony on behalf of Calpine Corp. in proceedings before the Louisiana Public Service Commission (Docket No. U-27836) related to the application by Entergy

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Louisiana, Inc. and Entergy Gulf States, Inc. for approval of the purchase of the Perryville, La. electric generating facility. Analyzed issues of market power and calculated the extent to which the proposed transaction increased market concentration.

- Submitted testimony on behalf of Calpine Corp. and Occidental Chemical Corp. in FERC proceedings (Docket No. ER91-569-023) related to the application by Entergy Services, Inc. for market based rate authority. Analyzed issues of generation market power, transmission market power, barriers to entry, and affiliate abuse in the Entergy control area. Implemented a model of the Entergy control area transmission constraints in performing the generation market power analysis.
- Submitted testimony on behalf of Calpine Corp. in FERC proceedings (Docket No. ER96-2495-018, *et al.*) related to the application by AEP Power Marketing, Inc., *et al.* for market based rate authority. Analyzed issues of generation market power, transmission market power, barriers to entry, and affiliate abuse in the AEP-SPP control area.
- Submitted expert testimony on behalf of InterGen in FERC proceedings (Docket No. EC03-131-000) related to Oklahoma Gas & Electric's proposed acquisition of NRG McClain. Analyzed issues of horizontal and vertical market power within the context of a hearing to identify appropriate mitigation measures.
- Submitted expert testimony on behalf of the Independent Energy Producers Association on vertical market power in FERC proceedings (Docket No. ER04-316-000) related to Southern California Edison's proposed acquisition of a Mountainview, Calif., electricity generating facility and a subsequent interaffiliate Power Purchase Agreement.
- On behalf of an energy company, prepared a whitepaper on the use of competitive procurements as a means of reducing market power in wholesale electric markets.
- In proceedings before the California Public Utilities Commission (Docket No. OIR 01-10-024), submitted report on behalf of the Independent Energy Producers Association regarding the proposed market price referent methodology for use in the California Renewables Portfolio Standards power solicitations.

## 12.5. Selected general consulting experience

- Estimated value of automotive engine technology for large international automotive manufacturer. Study prepared for tax and financial reporting purposes.
- Conducted numerous transfer pricing studies for tax planning, documentation, and audits. Clients include large multinational companies involved in automotive manufacturing,



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medical products, computer software/hardware, industrial equipment, retail clothing, food products, tobacco, oil drilling services, package delivery services, shipping, and industrial products.

- Designed, managed, and implemented intellectual property-related planning initiatives for large multinational clients in manufacturing, computer, telecommunications, and consumer product industries. Assessed value of intellectual property at issue, designed R&D cost sharing arrangements, and prepared transfer pricing documentation for tax compliance.
- Conducted several valuation studies related to potential future product liability and potential future litigation recoveries. Valuation reports prepared and submitted as part of the acquisition process for due diligence and tax reporting purposes.
- Conducted a valuation of a plaintiff's legal claims related to several ongoing major litigation matters. Valuation report submitted for tax reporting purposes.
- Conducted an anti-dumping study to estimate exposure to tariffs in the petrochemical industry.
- Conducted market and industry analyses for various due diligence, breach of contract, bankruptcy, and product liability engagements in the areas of insurance, general aviation, commercial property, electronic funds transfer, restaurant franchising, and construction.
- Managed the development of advanced data analytic software based on artificial neural networks for Internet-based financial services client. Responsible for identifying new product opportunities for client, evaluating feasibility of applications, performing cost-benefit analysis for new product investment, designing implementation plan, and managing the overall software development process. Applications included marketing effectiveness models, target marketing models, pricing models, risk models, and portfolio analysis models.
- In order to determine the appropriate compensation for risk in a long-term supply contract, developed a financial simulation model for a major transportation consortium in contract negotiations with the U.S. Department of Defense.
- Managed and directed various business consulting projects requiring statistical analysis to guide pricing and marketing decisions. Developed statistical models to quantify returns to marketing expenditures for automotive manufacturer and pharmaceutical companies.

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- Provided strategy consulting to seed-stage start-up companies, including development of business strategy, competitive analysis, intellectual property assessment, development of revenue and cost projections, and formulation of business and financing plan.
- Conducted extensive empirical research on the impact of R&D and advertising on profitability. Analysis quantifying the duration of benefits from R&D and advertising expenditures used in transfer pricing analysis for several international tax clients.
- Conducted research on the impact of foreign exchange rate fluctuations on U.S. prices.

## **12.6. Professional experience**

Dr. DeRamus was previously a Manager with A.T. Kearney and a Senior Manager with KPMG. In both positions, he had broad client responsibility including the management of complex litigation, transfer pricing, and business consulting engagements.

## **12.7. Education**

- Ph.D., Economics, University of Massachusetts at Amherst
- M.A., Economics, University of Massachusetts at Amherst
- B.A., Political Science (Magna Cum Laude), Duke University

## **12.8. Professional associations**

- American Economic Association
- Energy Bar Association

## **12.9. Languages**

- Fluent French and German
- Reading knowledge of Spanish

## **12.10. Related activities and honors**

- German Academic Exchange Service Grant (awarded)
- Council for European Studies Pre-Dissertation Fellowship (Columbia University)

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- Dean's University Fellowship (University of Massachusetts)
- Herbert Lehman Fellowship (New York State)

## 13. Appendix B: Materials considered

### 13.1. Documents produced in litigation

- ARMFTL000558, ARMFTL002713, ARMFTL002727, ARMFTL002738, ARMFTL006792
- EATON-00000422, EATON-0000105003, EATON-00009915, EATON-00010557, EATON-00010558, EATON-00011487, EATON-0001368182, EATON-00013738, EATON-00020739, EATON-00021007, EATON-00021484, EATON-00021851, EATON-00023369, EATON-00023437, EATON-00023444EATON-00023445, EATON-00023658, EATON-00023691, EATON-0002489, EATON-00025643, EATON-00025679, EATON-00026430, EATON-00027110, EATON-00027127, EATON-00029240, EATON-00029243, EATON-00029321, EATON-00029481, EATON-00031123, EATON-00032632, EATON-00033069, EATON-00033306, EATON-00034682, EATON-00043214, EATON-00054793, EATON-00060221, EATON-00063492, EATON-00063869, EATON-00063904, EATON-00067162, EATON-0007049, EATON-00077049, EATON-00077054, EATON-00077258, EATON-00082441, EATON-00082450, EATON-00086391, EATON-00086409, EATON-00099012, EATON-00100630, EATON-00100666, EATON-00107782, EATON-00108475, EATON-00108478, EATON-00108533, EATON-00108536, EATON-00108575, EATON-00109286, EATON-00109432, EATON-00130808, EATON-00130808, EATON-00140820, EATON-00146702, EATON-00146706, EATON-00146716, EATON-00146726, EATON-00153616, EATON-00197135, EATON-00202948, EATON-00207020, EATON-00211648, EATON-00215923, EATON-00216047, EATON-00219851, EATON-00220328, EATON-00220383, EATON-00220419, EATON-00230454, EATON-00230527, EATON-00230530, EATON-00230531, EATON-00260656, EATON-0029198, EATON-00380547, EATON-00380638, EATON-00380713, EATON-00380864, EATON-00380917, EATON-00380990, EATON-00382154, EATON-00382182, EATON-00384872, EATON-00387108, EATON-00437877, EATON-00438079, EATON-00438105, EATON-00438171, EATON-00450841, EATON-00581725, EATON-00634903, EATON-00639313, EATON-00639622, EATON-00640757, EATON-00648434, EATON-00653714, EATON-00656162, EATON-00659021, EATON-00666060, EATON-00677088, EATON-00677893, EATON-00684795, EATON-00685867, EATON-00687260, EATON-00687295, EATON-00688920, EATON-00688920, EATON-00688931, EATON-00688935, EATON-00689878, EATON-00699415, EATON-00700928, EATON-00704549, EATON-00704553, EATON-00704785, EATON-

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00705558, EATON-00710490, EATON-00710871, EATON-00713075, EATON-00714260, EATON-00716788, EATON-00716793, EATON-0074553, EATON-00766698, EATON-00908986, EATON-00920894, EATON-00922307, EATON-00930499, EATON-00930506, EATON-00969271, EATON-00970671, EATON-00971532, EATON-00971538, EATON-00976400, EATON-00984132, EATON-00999730, EATON-00999737, EATON-01006219, EATON-01122936, EATON-01125508, EATON-01132473, EATON-01163156, EATON-01164342, EATON-01174848, EATON-01189681, EATON-01198805, EATON-01202611, EATON-01202757, EATON-01202760, EATON-01208178, EATON-01217124, EATON-01222915, EATON-01222938, EATON-01381717, EATON-01382522, EATON-01405413, EATON-01405414, EATON-01405703, EATON-01405704, EATON-01408524, EATON-01409344, EATON-01425304, EATON-01441419, EATON-01441492, EATON-01441501, EATON-0689878

- ETN-FTL007122, ETN-FTL013086, ETN-FTL0147
- FTL0131, FTL0147, FTL0170, FTL0177, FTL0222, FTL0254, FTL0422, FTL0426, FTL-FB0001, FTL-FB0028, FTL-FB0031
- ITE-000091, ITE-000106, ITE-000108, ITE-000295, ITE-000312, ITE-000339, ITE-001350, ITE-001421, ITE-004331
- PACCAR000043, PACCAR000099, PACCAR000202, PACCAR000203, PACCAR000610, PACCAR000654, PACCAR000656, PACCAR000661, PACCAR000667, PACCAR000786, PACCAR001040
- VM 000084, VM 000158, VM 000161, VM 000162, VM 000180, VM 000199, VM 000201, VM 000224, VM 000263, VM 000564, VM 000847, VM 001164, VM 001668, VM 002059, VM 002089, VM 002234, VM 002238, VM 002901, VM 003641, VM 004352, VM 005020, VM 005739, VM 006546, VM 007384, VM 008234, VM 008894, VM 009550, VM 042155, VM 042280, VM 042281, VM2\_00002222, VM2\_00002249, VM2\_00002264, VM2\_00002523, VM2\_00002576, VM2\_00017761, VM2\_00018467, VM2\_00021025, VM2\_00021798, VM2\_00021798, VM2\_00022577, VM2\_00024140, VM2\_00024308, VM2\_00024309, VM2\_00024316, VM2\_00024354, VM2\_00024457, VM2\_00034307, VM2\_00070540
- ZFMA0001979, ZFMA0001984, ZFMA0002359, ZFMA0006653, ZFMA0028117, ZFMA0028132, ZFMA0034818, ZFMA0066778, ZFMA0095302, ZFMA0149986, ZFMA0158650, ZFMA0199602, ZFMA0200093, ZFMA0211293, ZFMA0211344,

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ZFMA0211401, ZFMA0211415, ZFMA0233523, ZFMA0339998, ZFMA0356437,  
ZFMA0357342, ZFMA0369760, ZFMA0371244, ZFMA0371650

### **13.2. Electronic data**

- Compustat database
- Bloomberg time series for CL1 COMB Comdty: West Texas Intermediate (WTI) crude oil price (\$ per barrel) in as quoted in NY Mercantile Exchange future contracts
- DataStream time series for USCNFCONQ: *The Conference Board* Consumer confidence index (seasonally adjusted) derived from *Consumer Confidence Survey*
- DataStream time series for FRTCW5Y: US Treasury Constant Maturity 5 year – middle interest rate
- Bureau of Labor Statistics, Producer Price Index News Release, December 2008, available at <http://www.bls.gov/news.release/ppi.nr0.htm>, (accessed February 17, 2009)
- Ibbotson “composite” Weighted Average Cost of Capital (“WACC”) for the “Motor Vehicle and Motor Vehicle Equipment Industry

### **13.3. Deposition testimony**

- Deposition of Mark Meegan
- Deposition of James Pohl
- Deposition of Greg Sharp
- Deposition of Mr. Louya
- Deposition of Mark Lampert
- Deposition of Mr. Floyd
- Deposition of Tony Lopes

### **13.4. Interrogatory responses**

- Defendant’s Response to Plaintiff’s First Set of Interrogatories, January 23, 2009.

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### 13.5. Third-party documents

#### 13.5.1. Third-party depositions and testimony

- Testament letter by William A. Gale, Vice President of Equipment Services for Universal Truckload Services, Inc. (“UTSI”).
- Testament letter by Paul Wade, Vice President of Phoenix Transportation Services, LLC.

#### 13.5.2. Regulatory agency documents

- Case No IV/M.1589 - Meritor/ZF Friedrichshafen, OJ C 262, 16.9.1999
- Supreme Court, *Eastman Kodak v. Image Technical Services Inc*, 504 U.S. 451, 481 (1992)
- *United States v. E. I. du Pont de Nemours & Co. (Cellophane)*, 351 U.S. 377, 404 (1956)
- U.S. Department of Justice and Federal Trade Commission Horizontal Merger Guidelines § 1.0 (1992) (revised edition 1997), available at <http://www.usdoj.gov/atr/public/guidelines/hmg.pdf> (accessed February 17, 2009)
- U.S. Department of Justice, Competition and Monopoly: Single-Firm Conduct under Section 2 of the Sherman Act, (2008), available at [www.usdoj.gov/atr/public/reports/236681.htm](http://www.usdoj.gov/atr/public/reports/236681.htm) (accessed February 17, 2009)
- *U.S. v. General Motors Corp.*, No. 95-530 (D. Del. Filed Nov. 16, 1993)

#### 13.5.3. Scholarly publications

- Areeda, Philip and Louis Kaplow *Antitrust Analysis*, Aspen Publishers, Inc., 1997
- Bork, Robert H. *The Antitrust Paradox*. New York: Free Press, 1978
- D. Douglas Bernheim and Michael D. Whinston, “Exclusive Dealing,” *Journal of Political Economy* 106, no. 1. (1998): 64–103
- Chamberlin, Edward, *The Theory of Monopolistic Competition*, Cambridge, Mass.: Harvard University Press, 1933
- Dixit, Avinash K. and Joseph E. Stiglitz, “Monopolistic Competition and Optimum Product Diversity,” *American Economic Review* 67, (1977): 297–308
- Farrell, Joseph, “Deconstructing Chicago on Exclusive Dealing,” mimeo (2005)

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- Greenlee Patrick, David Reitman, and David S. Sibley, “An antitrust analysis of bundled loyalty discounts,” *International Journal of Industrial Organization* 26, no. 5. (2008):1132—1152
- Krattenmaker, Thomas and Steven Salop, *Anticompetitive Exclusion: Raising Rivals’ Costs to Achieve Power over Price*, 96 Yale Law Journal 209 (1986)
- Maddala, G.S.(1983), *Limited Dependent and Qualitative Variables in Econometrics*, Cambridge University Press, Cambridge
- Salop, Steven C. “Monopolistic Competition with Outside Goods,” *Bell Journal of Economics* 10 (1979): 141–156
- Segal, Ilya R. and Michael D. Whinston, “Exclusive contracts and protection of investments,” *RAND Journal of Economics* 31, no. 4. (2000):603–633
- Segal, Ilya R. and Whinston M.D., “Naked Exclusion: Comment,” *The American Economic Review* 90, no. 1. (2000): 296–309
- Posner, Richard A. *Antitrust Law: An Economic Perspective*. Chicago: University of Chicago Press (1976).
- Rasmusen, Eric B., J. Mark Ramseyer, and John S. Wiley, Jr., “Naked Exclusion,” *The American Economic Review*, 81, no. 5. (1991):1137–1145
- Spence, Michael, “Product Selection, Fixed Costs, and Monopolistic Competition,” *Review of Economic Studies* 43 (1976): 217–235
- Whinston, Michael D. *Lectures on Antitrust Economics*. The MIT Press. (2006)

#### **13.5.4. Industry publications**

- Eaton, Eaton history, <http://www.eaton.com/EatonCom/OurCompany/AboutUs/EatonHistory/index.htm> (accessed February 17, 2009)
- ArvinMeritor, ArvinMeritor history, <http://www.arvinmeritor.com/about/history.asp> (accessed February 17, 2009)
- Allison, “The Carlyle Group and Onex Complete Acquisition of Allison Transmission from General Motors,” press release, August 7, 2007, available at



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<http://www.allisontransmission.com/company/pressreleases/Aug2007/316.jsp> (accessed February 17, 2009)

- TTC, About us, <http://www.ttcautomotive.com/English/aboutus/aboutus.asp> (accessed February 17, 2009)
- Mack, Commercial results, <http://www.macktrucks.com/default.aspx?pageid=196> (accessed February 17, 2009)
- PACCAR, Get to know PACCAR, [http://www.paccar.com/company/get\\_to\\_know.asp](http://www.paccar.com/company/get_to_know.asp) (accessed February 17, 2009)
- Eaton, Eaton Roadranger Warranty Guide, available at [http://www.roadranger.com/ecm/groups/public/@pub/@eaton/@roadranger/documents/content/ct\\_126924.pdf](http://www.roadranger.com/ecm/groups/public/@pub/@eaton/@roadranger/documents/content/ct_126924.pdf) (accessed February 17, 2009)
- Eaton, Eaton Roadranger Warranty Manual, available at [http://www.roadranger.com/ecm/groups/public/@pub/@eaton/@roadranger/documents/content/rr\\_tcw-0600.pdf](http://www.roadranger.com/ecm/groups/public/@pub/@eaton/@roadranger/documents/content/rr_tcw-0600.pdf) (accessed February 17, 2009)
- Sean Kilcarr, “Shifting for Fuel Economy,” *FleetOwner*, February 1, 2006
- Caterpillar, Caterpillar on-highway engines, <http://ohe.cat.com/cda/layout?m=136641&x=7> (accessed February 17, 2009)
- Bulk Transporter, “Cat to exit NA truck engine business, partner with NavistarAdd,” June 18 2008, available at [http://bulktransporter.com/news/CAT\\_Navistar\\_alignment/index.html](http://bulktransporter.com/news/CAT_Navistar_alignment/index.html) (accessed February 17, 2009)
- PR Newswire, “Meritor Automotive and ZF To Form Strategic Joint Venture: ZF Meritor,” June 10, 1999, available at <http://www.prnewswire.co.uk/cgi/news/release?id=45007> (accessed February 17, 2009)
- *Land Line Magazine*, “ZF Meritor's FreedomLine two-pedal automated manual transmission,” June 2001, available at [http://www.landlinemag.com/Archives/2001/Jun2001/Your\\_Equipment/FreedomLine.html](http://www.landlinemag.com/Archives/2001/Jun2001/Your_Equipment/FreedomLine.html) (accessed February 17, 2009)
- ZF Friedrichshafen, “ZF-AS Tronic: A Renown Product Celebrates its Anniversary,” press release January 12—18, available at

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[http://www.zf.com/corporate/en/press/press\\_releases/products\\_press/products\\_detail\\_696807.jsp](http://www.zf.com/corporate/en/press/press_releases/products_press/products_detail_696807.jsp) (accessed February 17, 200)

- The Auto Channel, “ZF Meritor LLC Launches FreedomLine,” November 3, 1999, available at <http://www.theautochannel.com/news/press/date/19991102/press002395.html> (accessed February 17, 2009)
- Diesel Progress North American Edition , “Eaton introduces new Fuller 10-speed transmission - Powertrain – Advertisement,” June, 2003, available at [http://findarticles.com/p/articles/mi\\_m0FZX/is\\_6\\_69/ai\\_104684664](http://findarticles.com/p/articles/mi_m0FZX/is_6_69/ai_104684664) (accessed February 17, 200)
- American Society of Appraisers, Business Valuation Standards—Definitions

## 14. Appendix C: Margin analysis

### 14.1. Methodology description

- (325) I performed an analysis of operating margins of Eaton and comparable companies over the 2005–2007 period. For the purpose of this analysis, I define operating margin as the ratio of the earnings before interest and taxes, or EBIT, to the company's revenues.

$$\text{Operating Margin} = \text{EBIT} / \text{Revenues}$$

- (326) Table 14 provides an example of the calculation of EBIT.

**Table 14: Example EBIT calculation detail for a sample comparable public company**

	Line item	Sample comparable public company
A	Revenue	\$100
B	Cost of Good Sold (ex. Depreciation & Amortization)	\$50
<b>C = A – B</b>	<b>Gross profit</b>	<b>\$50</b>
D	SG&A (ex. Depreciation & Amortization)	\$20
<b>E = C – D</b>	<b>EBITDA</b>	<b>\$30</b>
F	Less: Depreciation and Amortization	\$10
<b>G = E – F</b>	<b>EBIT</b>	<b>\$20</b>

- (327) For example, according to the previous table, the sample company's operating margin is 20% (EBIT of \$20 divided by the company's revenues of \$100). In other words, for every \$100 in sales, the company was able to retain \$20 in operating profits.
- (328) Furthermore, for the purpose of this analysis, I define a set of comparable companies as those classified under the GICS code 25101010 – Auto Parts & Equipment.
- (329) Based on the selected GICS industry code, I searched the Research Insight database using the following criteria:
- Companies based in the US
  - Annual sales equal to or greater than \$25 million

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■ Primary issue only.<sup>377</sup>

- (330) Based on the selected GICS code and the criteria discussed in the previous paragraph, I identified 49 companies in the Auto Parts & Equipment GICS sub-industry.
- (331) I then proceeded to collect data pertaining to revenues and EBIT for the period 2005–2007 from the Research Insight database. For ten companies in the sample, Research Insight did not contain any relevant financial information for the period 2005–2007. Furthermore, an additional five companies in the sample had relevant EBIT and revenue data covering less than three years.

#### **14.2. Review of the margin analysis results**

- (332) My margin analysis of the companies in the auto parts and equipment industry shows that the 25<sup>th</sup> percentile, median, and 75<sup>th</sup> percentile operating margin for the industry over the 2005–2007 period was 0.9%, 4.2%, and 7.1%, respectively.
- (333) A summary of the operating margin analysis of the companies in the auto parts and equipment industry over the period 2005–2007 is provided in Table 15.

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<sup>377</sup> Research Insight is an issue/security-based database (as opposed to company-based). A single company can have more than one security issued. Thus, selecting the primary issue option reduces the likelihood of company duplication in the sample.

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**Table 15: Operating margin analysis for the companies in the auto parts and equipment industry**

EBIT/Revenues for 2005–07	2005	2006	2007	Average 2005–07
Advanced Accessory Holdings	-0.1%			-0.1%
Amerigon	7.2%	10.9%	12.1%	10.1%
ArvinMeritor	3.0%	2.8%	1.6%	2.4%
Borg Warner	8.7%	7.7%	8.1%	8.2%
Clarion Technologies	0.6%			0.6%
Dana Holdings	-0.9%	-0.8%	1.4%	-0.1%
Delphi	-4.4%	-7.2%	-6.2%	-6.0%
Dorman Products	10.7%	10.3%	10.5%	10.5%
Drew Industries	8.8%	7.6%	9.8%	8.7%
Exide Technologies	-1.1%	1.0%	3.4%	1.1%
Federal Mogul	2.2%	3.8%	4.9%	3.6%
Finishmaster	7.5%	7.8%	6.1%	7.1%
Fuel Systems Solutions	2.7%	8.9%	9.7%	7.1%
Gentex	25.4%	22.1%	21.7%	23.1%
Hawk	5.8%	6.8%	8.1%	6.9%
Hayes Lemmerz	-0.3%	2.5%	2.1%	1.4%
J.B. Pointdexter	3.7%	3.9%	2.5%	3.4%
Johnson Controls	4.6%	4.5%	5.2%	4.8%
Lear	1.6%	2.6%	4.7%	3.0%
Metaldyne	2.7%			2.7%
Modine Manufacturing	5.9%	3.0%	2.2%	3.7%
Motorcar Parts of America	5.8%	-1.6%	9.6%	4.6%
Noble International	6.0%	4.4%	2.2%	4.2%
Obsidian Enterprises	-8.8%			-8.8%
Proliance International	-5.7%	-0.5%	1.6%	-1.5%
Quantum Fuel Systems Technologies	-18.0	-37.6%	-72.7%	-42.8%
Remy International	0.7%			0.7%
Shiloh Industries	6.7%	4.3%	4.3%	5.1%
Spartan Motors	3.7%	6.6%	5.8%	5.3%
Stanadyne Automotive	7.4%	10.4%	11.2%	9.7%
Standard Motor Products	1.9%	4.6%	4.2%	3.6%
Stoneridge	4.2%	4.7%	4.7%	4.5%
Superior Industries	1.8%	-0.4%	0.6%	0.7%
Tenneco	5.3%	4.8%	4.6%	4.9%
Tongxin	4.0%	15.5%	16.5%	12.0%
TRW	5.1%	4.9%	4.3%	4.8%
Visteon	-2.3%	0.2%	-0.8%	-1.0%
WABCO Holdings	12.3%	11.5%	11.9%	11.9%
Williams Controls	18.9%	20.7%	18.2%	19.3%
<b>25<sup>th</sup> Percentile</b>				<b>0.9%</b>
<b>Median</b>				<b>4.2%</b>
<b>75<sup>th</sup> Percentile</b>				<b>7.1%</b>

## 15. Appendix D: An econometric model of but-for shares

### 15.1. Estimation approach

- (334) I model the plaintiff's market share in month  $t$ ,  $S_t$  as

$$S_t = f(S_{t-1}, X_t, D_t),$$

where  $S_{t-1}$  is the plaintiff's market share in the previous month;  $X_t$  is a 1X5 vector of explanatory variables (including a constant term and macroeconomic variables), and  $D_t$  is a dummy variable. I describe my explanatory variables in Table 16 below.

**Table 16: Data sources**

Variable	Description	Source
$S_t$	Share of Class 8 truck builds in NAFTA that use a ZF Meritor or a Meritor transmission	Arvin Meritor penetration reports
$X_{2t}$	Class 8 truck builds in NAFTA	Arvin Meritor penetration reports
$X_{3t}$	Consumer confidence index (seasonally adjusted) derived from (monthly) <i>Consumer Confidence Survey</i> based on a representative sample of 5,000 U.S. households	<i>The Conference Board</i> , as reported by (key USCNFCONQ).
$X_{4t}$	West Texas Intermediate (WTI) crude oil price (\$ per barrel) in as quoted in NY Mercantile Exchange future contracts (monthly simple average of trading-day prices)	NYMEX, as reported by Bloomberg (ticker CL1 COMB Comdty).
$X_{5t}$	US Treasury Constant Maturity 5 year – middle interest rate	<i>Federal Reserve Bank of St. Louis</i> , as reported by DataStream (key FRTCW5Y)
$D_t$	Dummy variable taking value 1 from July 2000 onward, 0 otherwise.	

- (335) In principle, one could use Ordinary Least Square (OLS) to estimate a model where  $f(\cdot)$  is a linear function. However, this approach is not appropriate as it does not take into account the fact that the dependent variable can only take values between 0 and 1. One of the implications of this deficiency of the linear OLS model in this context is that there is no guarantee that the predicted values for the dependent variable lie between 0 and 1, as market shares should.
- (336) As is standard in econometric applications, I overcome this problem using a log-odds transformation of the fractional variable of interest (i.e., ZFM's share of Class 8 trucks) then

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expressing it as a linear function of explanatory variables (which, in my case, include the lagged transformed dependent variable):<sup>378</sup>

$$(A) \log\left(\frac{S_t}{1-S_t}\right) = \beta_0 \log\left(\frac{S_{t-1}}{1-S_{t-1}}\right) + \beta_1 + \beta_2 X_{2t} + \beta_3 X_{3t} + \beta_4 X_{4t} + \beta_5 X_{5t} + \\ + \delta_0 D_t \log\left(\frac{S_{t-1}}{1-S_{t-1}}\right) + \delta_1 D_t + \partial_2 D_t X_{2t} + \partial_3 D_t X_{3t} + \partial_4 D_t X_{4t} + \beta_5 D_t X_{5t} + \varepsilon_t$$

(337) Since  $L_t \equiv \log[S_t/(1-S_t)]$  can take on any real value and is well-defined provided  $S_t$  is not 0 or 1 (as it is the case in the sample I use), the log-odds transformation overcomes the potential implausibility of predicted values in the un-transformed model.

(338) I use OLS to estimate the regression equation (A). This allows me to compute the expected value of  $L_t$  given  $L_{t-1}$ ,  $X_t$  and  $D_t$ :

$$E[S_t / L_{t-1}, X_t, D_t] \equiv \hat{L}_t = \hat{\beta}_0 L_{t-1} + X_t \hat{\beta} + \hat{\delta}_0 D_t L_{t-1} + D_t X_t \hat{\delta}$$

(339) However, this does not enable me to directly recover  $S_t$  given  $L_{t-1}$ ,  $X_t$  and  $D_t$  via the inverse log-odds transformation because in general

$$\frac{\exp(\hat{L}_t)}{1 + \exp(\hat{L}_t)} \neq \int_{-\infty}^{\infty} \frac{\exp(\hat{L}_t + \varepsilon_t)}{1 + \exp(\hat{L}_t + \varepsilon_t)} f(\varepsilon_t / x) d\varepsilon_t = E[S_t / L_{t-1}, X_t, D_t]$$

(340) As it is standard in econometric applications, I overcome this shortcoming of log-odds linear models through smearing.

(341) Smearing consists of extracting many draws from the random variable  $\varepsilon_t$ , which under the assumption of OLS is distributed as normal with mean 0 and variance that can be unbiasedly estimated by the sum of squared OLS residuals divided by the regression equation degrees of freedom (the difference between sample size and number of regressors). Having extracted 1,000 draws from the random variable  $\varepsilon_t$ , I calculate  $E[S_t | L_{t-1}, X_t, D_t]$  as:

$$E[S_t / L_t, X_t, D_t] = \frac{1}{1000} \sum_{i=1}^{1000} \frac{\exp(\hat{L}_t + \varepsilon_i)}{1 + \exp(\hat{L}_t + \varepsilon_i)}$$

(342) Having empirically derived the probability distribution of  $L_t$  also allows me to compute the 95% confidence intervals for  $E[S_t | L_{t-1}, X_t, D_t]$  that I report in this document.

<sup>378</sup> See for instance Maddala, G.S.(1983), *Limited Dependent and Qualitative Variables in Econometrics*, Cambridge University Press, Cambridge.

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**15.2. Estimation results**

- (343) Table 17, reports the results I obtain estimating equation (A) with White-corrected standard errors.
- (344) Figure 36 compares the predicted shares I obtain with my econometric approach to the observed values. Recognizing that predicted shares are random variables that can take on values higher or lower than the expected mean, I also report 95% confidence interval boundaries.

**Table 17: Estimation results**

Variable	Estimated coefficient ( <i>p-values in parentheses</i> )	
	$\beta$	$\delta$ (coefficient on <i>x</i> when interacted with <i>d</i> )
Lagged Log-odds ratio	0.614 (0.000)	0.358 (0.002)
Trucks Built	-0.081 (0.084)	0.272 (0.056)
Consumer Confidence	0.003 (0.003)	-0.007 (0.091)
Oil Price	0.003 (0.526)	-0.015 (0.098)
Interest Rate	-0.089 (0.003)	0.162 (0.035)
Constant	-0.495 (0.034)	0.518 (0.110)
Observations	191	
Sum of Squared Residuals	11.028	
R <sup>2</sup>	0.955	

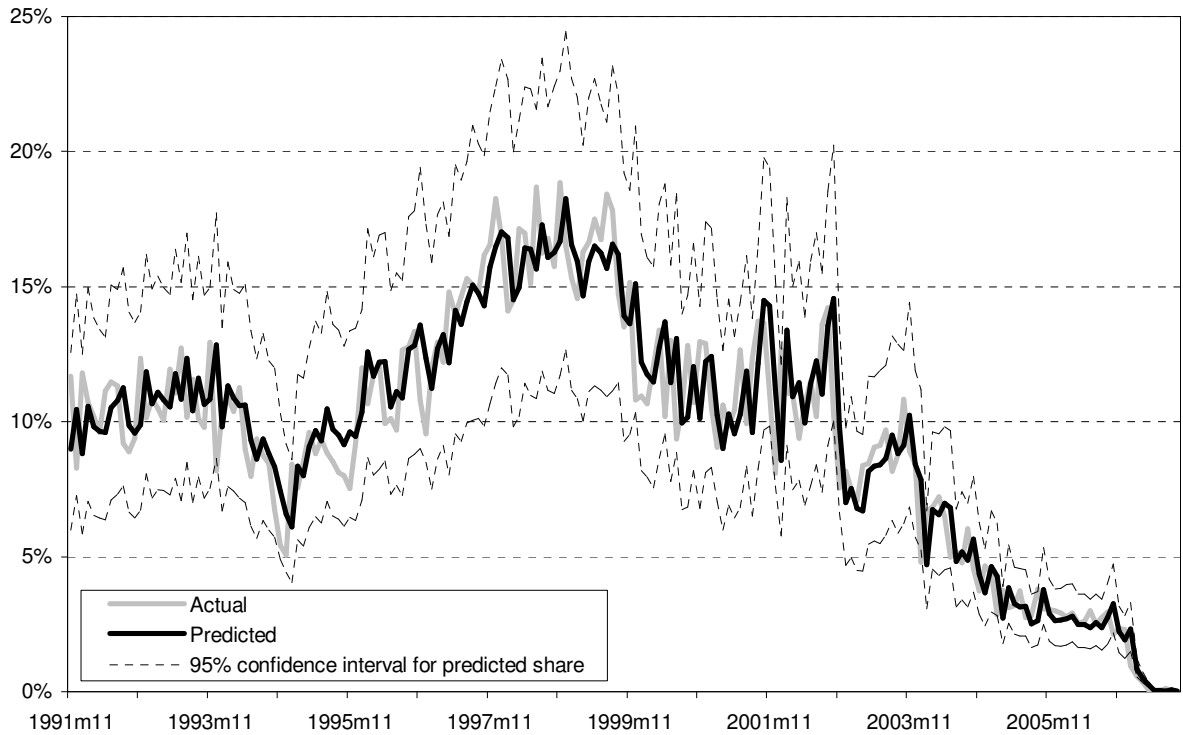
Source: Bates White.

Note: Trucks Built in 10,000s. Consumer Confidence index ranges between 47.3 and 144.7. Oil Price in dollars. Interest Rate in percentage points.



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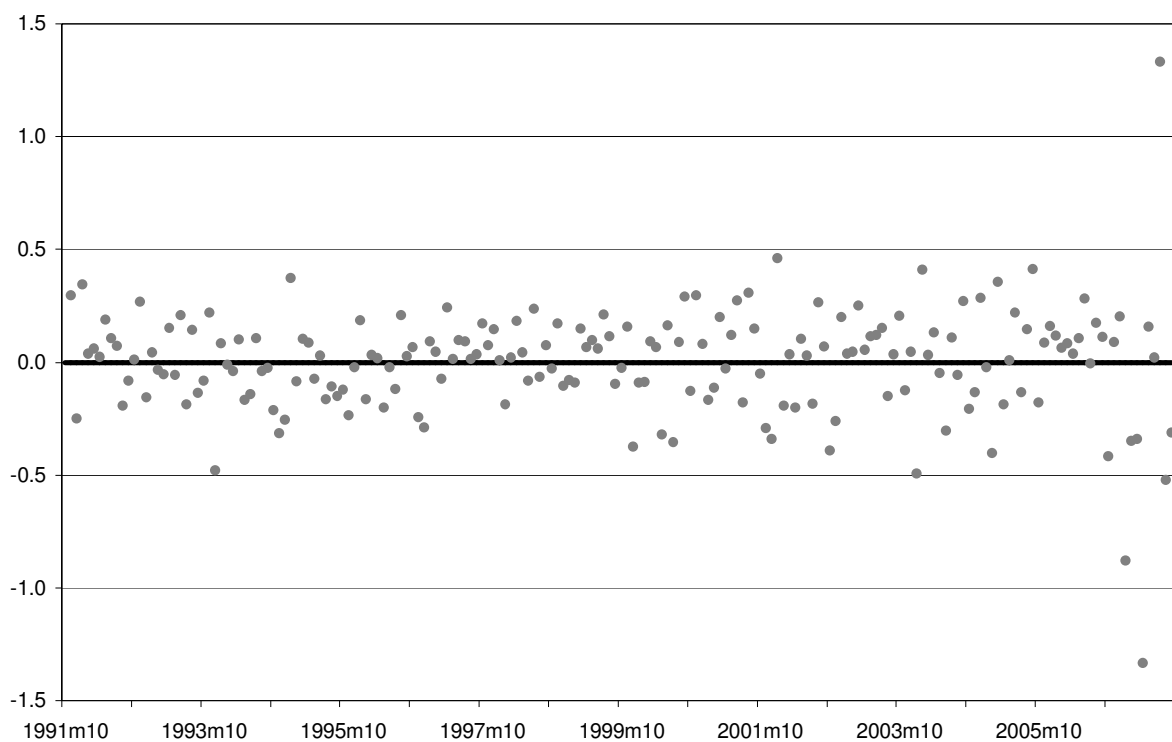
**Figure 36: Actual and predicted market share using econometric model**



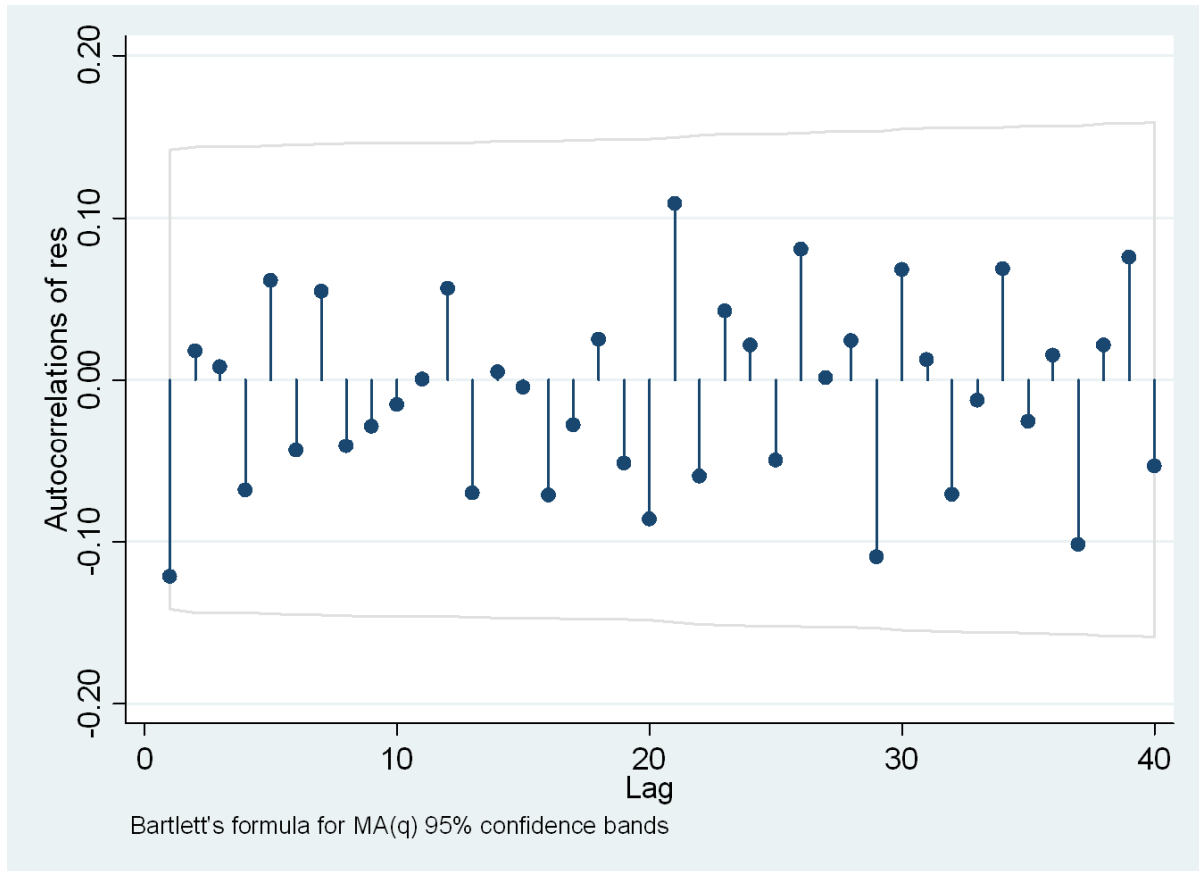
- (345) The Durbin-Watson test statistic for the presence of autocorrelation in the residuals is 2.226, so I cannot reject the null hypothesis of no autocorrelation. Figure 37 and Figure 38 report additional information about the regression's goodness of fit.

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**Figure 37: Log-odds ratio regression: residuals plot**



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**Figure 38: Log-odds ratio regression: residuals correlogram**

- (346) Except for the constant term, all estimated coefficients on interacted variables are statistically significantly different from 0 (at the 10% confidence level). Moreover, a Wald test allows me to reject the null hypothesis that there was no structural break after July 2000 in the relationship between the plaintiff's (log-odds transformation of) market share and the explanatory variable — the test statistic value is 3.67, so I reject  $H_0: \delta=0$  at the 1% confidence level.

### 15.3. But-for market shares

- (347) As I explain in the body of the report, I compute but-for market shares recursively. Formally, I proceed as follows. The but-for log-odds ratio in July 2000 is:

$$(BF1) \hat{L}_{7/00} = \beta_0 L_{6/00} + \beta_1 + \beta_2 X_{2,7/00} + \beta_3 X_{3,7/00} + \beta_4 X_{4,7/00} + \beta_5 X_{5,7/00}$$

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- (348) For  $t=8/00$  onward, instead of using the log-odds ratio corresponding to the observed as I do in until July 2000, I use the predicted log-odds ratio for the previous month,  $\hat{L}_{t-1}$ ; formally:

$$(BF2) \hat{L}_{8/00} = \beta_0 \hat{L}_{7/00} + \beta_1 + \beta_2 X_{2,8/00} + \beta_3 X_{3,8/00} + \beta_4 X_{4,8/00} + \beta_5 X_{5,8/00}$$

- (349) The fact that I have information on explanatory variables other than the plaintiff market share that extend beyond the end of fiscal year 2007 allows me to compute but-for log-odds ratios beyond September 2007 (when the plaintiff exited the market). I then obtain the corresponding predicted monthly but-for market shares I show graphically in the body of the report (see Figure 35) through smearing. Formally:

$$E[S_t / L_t, X_t] = \frac{1}{1000} \sum_{i=1}^{1000} \frac{\exp(\hat{L}_t + \varepsilon_i)}{1 + \exp(\hat{L}_t + \varepsilon_i)},$$

where  $\hat{L}_t$  is computed using either equation (BF1) or (BF2) depending on the month  $t$ , and the  $\varepsilon_i$ s are random draws from a normal distribution with mean 0 and variance equal to  $11.028/(191-12)=0.062$  (see Table 17).

## 16. Appendix E: Comparable public company method

- (350) The comparable public company method of estimating the value of a company looks to the public capital markets for evidence of prices investors are willing to pay for companies having investment characteristics comparable to the firm being valued. In general, comparable firms are those within the same industry as the company being valued and similar with respect to size, growth, risk, products, markets, and cyclicity. In practice, multiples derived from the prices of comparable firms are applied to operating variables taken from the subject firm's income statements in order to estimate its value.
- (351) Implementation of the comparable public company entails four primary steps:
- Identification of comparable public companies,
  - Selection of appropriate market-based pricing multiples,
  - Calculation of market-based pricing multiples based on comparable public company trading prices and financial fundamentals, and
  - Calculation of value based on the application of comparable public company market-based pricing multiples to the target company's operating earnings measures.

### 16.1. Identification of comparable public companies

- (352) For the purpose of my analysis, I identified three groups of comparable companies. The following provides an in-depth review of each group of comparable companies.

#### 16.1.1. Comparable group I – ArvinMeritor and Eaton

- (353) The first group of comparable companies consists of ArvinMeritor and Eaton alone. By analyzing the market-based pricing multiples of these two companies, I obtain an indication of prices that investors are willing to pay for the ArvinMeritor and Eaton businesses only.

#### 16.1.2. Comparable group II – Analyst-derived comparables

- (354) I reviewed various research reports prepared by research analysts at select investment banks to create a second group of comparable companies. In particular, I identified the companies that were, according to research analysts, comparable to the Eaton Truck segment.

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(355) Based on the research reports<sup>379</sup> prepared by analysts at J.P Morgan and Deutsche Bank, the following companies were identified as comparable to the Eaton Truck business:

- ArvinMeritor
- Cummins
- WABCO Holdings
- Paccar
- Navistar.

### **16.1.3. Comparable group III – GICS-based comparables**

#### **16.1.3.1. Defining a sample of potential comparable companies**

- (356) In this approach, I first define a sample of comparable public companies based on industry and line of business operating characteristics. I initially focused on the companies identified as comparable by virtue of their inclusion in the Global Industrial Classification Standard (“GICS”) codes that I consider applicable to the manufacture of components for Class 8 commercial trucks.
- (357) The Global Industrial Classification Standard is a global industry classification system that was developed by Standard & Poor’s (“S&P”) and Morgan Stanley Capital International (“MSCI”). The GICS methodology assigns each company to a global sub-industry, and to a corresponding industry, industry group and a sector.
- (358) Based on the results of the GICS screen, I searched the Standard & Poor’s Research Insight<sup>380</sup> (“S&P Research Insight” or “Research Insight”) database for companies in the selected GICS codes. Research Insight is a financial database developed by S&P that offers extensive financial and market data on more than 70,000 active and inactive companies from around the world.
- (359) I refined the sample further based on a qualitative examination of the companies identified in each GICS classification, and where appropriate, added companies from other GICS codes that appeared to have comparable operating profiles, which I discuss in more depth in the subsequent sections of this report.

<sup>379</sup> Stephen Volkmann, CFA, Eaton Research Report, J.P. Morgan, Aug. 8, 2007

Nigel Coe, CFA, Eaton Research Report, Deutsche Bank, 23. Nov. 2007

<sup>380</sup> The S&P Research Insight database was formerly known as S&P Compustat.

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#### 16.1.3.2. Review of the GICS industry codes

- (360) As a first step in screening the sample of companies, I focused on companies included in the following GICS codes:
- GICS code 25101010 – Auto Parts and Equipment
  - GICS code 20106010 – Construction & Farm Machinery and Heavy Trucks.
- (361) The GICS system defines companies in the “Construction and Farm Machinery and Heavy Trucks” sub-industry as “manufacturers of heavy duty trucks, rolling machinery, earth-moving and construction equipment, heavy farm machinery and manufacturers of related parts.”<sup>381</sup> In addition, the GICS system defines companies in the “Auto Parts & Equipment” sub-industry as “manufacturers of parts and accessories for automobiles and motorcycles.”<sup>382</sup>
- (362) Furthermore, due to a possibility that potentially comparable companies may be classified under additional GICS codes (for example, Eaton is classified under the GICS code 20106020 – “Industrial Machinery”), I reviewed the companies classified under two additional GICS codes:
- GICS code 20106010 – Industrial Machinery
  - GICS code 20105010 – Industrial Conglomerates.
- (363) The GICS system defines companies in the “Industrial Machinery” sub-industry as “manufacturers of industrial machinery and industrial components”.<sup>383</sup> Moreover, the GICS system defines companies in the “Industrial Conglomerates” sub-industry as “diversified industrial companies with business activities in three or more sectors, none of which contributes a majority of revenues.”

#### 16.1.3.3. Review of companies in the select GICS codes

- (364) Based on the selected GICS sub-industry codes, I searched the Research Insight database using the following criteria:
- Companies based in the US
  - Annual sales equal to or greater than \$25 million

<sup>381</sup> This sub-industry also includes companies engaged in non-military shipbuilding.

<sup>382</sup> The sub-industry excludes companies classified in the Tire & Rubber sub-industry.

<sup>383</sup> This sub-industry also includes companies that manufacture presses, machine tools, compressors, pollution control equipment, elevators, escalators, insulators, pumps, roller bearings and other metal fabrications.

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- Primary issue only.<sup>384</sup>

(365) Based on the selected GICS codes and the criteria discussed in the previous paragraphs, I identified the following companies in each of the four GICS codes:

- Construction & Farm Machinery and Heavy Trucks – 37 companies
- Auto Parts and Equipment – 49 companies
- Industrial Machinery – 93 companies
- Industrial Conglomerates – 14 companies.

#### **16.1.3.4. Refining the sample**

(366) The next step of my analysis was to evaluate the companies I identified in the initial GICS code screen to assess the degree to which they were comparable to ZFM in terms of business characteristics and products, as well as risk and growth based on operating results and financial position. Thus, the factors I examined encompass both business characteristics and financial performance. To obtain the requisite data and information for this analysis, I collected financial data and information from Research Insight and SEC filings and analyzed the following data and information for the time periods relevant to my analysis:

- Company descriptions, business line(s), markets and products
- Company size (sales, assets)
- Company growth
- Cost structure (COGS and SG&A)
- Profitability in absolute and margin terms (gross and operating margins)
- Operating results (EBIT and EBITDA)
- Capital structure (debt, equity, assets)
- Market capitalization and enterprise value

<sup>384</sup> Research Insight is an issue/security-based database (as opposed to company-based). A single company can have more than one security issued. Thus, selecting the primary issue option reduces the likelihood of company duplication in the sample.



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■ Enterprise value multiples.

(367) I eliminated companies lacking data sufficient to conduct my analyses, and selected firms comparable to ZFM based on business, market, growth and risk characteristics including top-line (revenue size and growth) and/or bottom-line (EBIT, EBITDA) operating results and financial position, while also taking into account that ZFM was a joint venture that conducted operations as part of larger business entities.

(368) Based on this review and the criteria discussed above, of the 193 companies that I reviewed, I identified eleven companies that constitute a reasonable set of companies comparable to ZFM:

- Accuride
- ArvinMeritor
- Borg Warner
- CLARCOR
- Carlisle
- Cummins
- Eaton
- Navistar
- Paccar
- WABCO Holdings
- Williams Controls

#### **16.1.4. Descriptions of the selected companies**

(369) The following sections provide descriptions of the companies included in the three groups of comparable companies.

##### **16.1.4.1. Accuride**

(370) Accuride engages in the design, manufacture, and distribution of components for trucks, trailers, and other vehicles. The company's operations consist of seven operating segments,

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aggregated into three reportable segments. The company's products include heavy and medium-duty steel and aluminum wheels, light truck steel wheels, wheel-end components and assemblies, such as brake drums, disc wheel hubs, spoke wheels, disc brake rotors, and automatic slack adjusters. The company's products also include truck body and chassis parts, including bumpers, fuel tanks, bus components and chassis assembly, battery boxes and toolboxes, front-end cross members, muffler assemblies, and crown assemblies and components, as well as fenders, exhaust components, sun visors, windshield masts, step assemblies, quarter fender brackets, under-bells, fuel tank supports, hood inner panels, door assemblies, dash panel assemblies, outrigger assemblies, and diesel particulate filter assemblies. In addition, Accuride manufactures air suspension and static seating assemblies for heavy and medium-duty trucks, the related aftermarket, school and transit buses and other commercial vehicle components, which include military wheels, drive axles and gear boxes, transmission and engine-related components, industrial components, and non-powered farm equipment. The company serves original equipment manufacturers ("OEM") of heavy and medium-duty trucks, commercial trailers, light trucks, buses, and specialty and military vehicles, as well as aftermarket suppliers, such as OEM dealer networks, wholesale distributors, and aftermarket buying groups.

#### **16.1.4.2. ArvinMeritor**

- (371) ArvinMeritor manufactures products for use in commercial, specialty and light vehicles. The company supplies a range of integrated systems, modules, and components to commercial truck, light vehicle, trailer, and specialty original equipment manufacturers, as well as various after markets. The company's Commercial Vehicle Systems segment supplies drivetrain systems and components, including truck axles, drivelines and other products, suspension systems and trailer products, braking systems, and transmissions; and specialty systems consisting of off-highway vehicle products, specialty vehicle products, and government products, such as axles, brakes, and brake system components, including ABS, trailer products, transfer cases, and drivelines for use in medium-duty and heavy-duty trucks, trailers, and specialty vehicles. The company's Light Vehicle Systems segment supplies various products including body systems, such as roof and door systems, chassis systems consisting of suspension systems, suspension modules, ride control products, and wheel products, such as fabricated steel wheels, bead seat attached wheels, full-face designed wheels, and clad wheels for passenger cars, all-terrain vehicles, light and medium trucks and sport utility vehicles.

#### **16.1.4.3. Borg Warner**

- (372) BorgWarner engages in the manufacture and sale of engineered automotive systems and components primarily for power train applications worldwide. The company operates in two

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segments, Engine and Drivetrain. The Engine segment develops products to manage engines for fuel efficiency, reduced emissions and enhanced performance. The segment manufactures turbochargers, chains, emissions and thermal systems, diesel cold start and gasoline ignition technology, and diesel cabin heaters. Its chain and chain systems include timing chain and timing drive systems, crankshaft and camshaft sprockets, chain tensioners, guides, and snubbers. The Engine segment also manufactures electric air pumps, turbo actuators, and exhaust gas recirculation valves for gasoline and diesel applications; fluid pumps, including engine oil pumps for engine and transmission lubrication; and products for engine air intake management. The Drivetrain segment's supplies clutching and control systems, including transmission bands, torque converter clutches, and friction clutch modules, mechanical products, such as one-way clutches and torsional vibration dampers, controls products, including electro-hydraulic solenoids, solenoid modules, high pressure solenoids for automated manual transmissions, and dual clutch transmissions products comprising dual clutch modules, torsional vibration dampers, and mechatronic control modules. The company sells its products to original OEMs of light vehicles, such as passenger cars, sport-utility vehicles, vans, and light trucks, and OEMs of commercial trucks, buses, and agricultural and off-highway vehicles. In addition, the company manufactures and sells its products to systems suppliers and the aftermarket for light and commercial vehicles.

#### **16.1.4.4. CLARCOR**

- (373) CLARCOR provides filtration products and services to customers worldwide. The company's Engine/Mobile Filtration segment sells filtration products used on engines and in mobile equipment applications, including trucks, automobiles, busses and locomotives and other equipment. The products include oil, air, fuel, coolant, transmission, and hydraulic fluid filters used on engines and in mobile equipment applications, including trucks, automobiles, buses and locomotives, and marine, construction, industrial, mining, and agricultural equipment. CLARCOR's Industrial/Environmental Filtration segment offers process filtration products, and air filtration products and systems used to maintain interior air quality and to control exterior pollution. The process filtration products include specialty industrial process liquid filters; filters for pharmaceutical processes and beverages; filtration systems, filters, and coalescers for the oil and natural gas industry; filtration systems for aircraft refueling, anti pollution, sewage treatment, and water recycling; bilge separators; sand control filters for oil and gas drilling; and woven wire and metallic products for filtration of plastics and polymer fibers. The air filtration products comprise air filters and cleaners, including anti-microbial treated filters and electronic air cleaners, which are used in commercial buildings, hospitals, factories, residential buildings, paint spray booths, gas turbine systems, medical facilities, motor vehicle cabins, aircraft cabins, clean rooms,

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compressors, and dust collector systems. The company's Packaging segment manufactures various packaging products, including containers, closures and canisters.

#### **16.1.4.5. Carlisle**

- (374) Carlisle is a diversified manufacturing company consisting of nine operating companies which manufacture and distribute a broad range of products. It operates in five segments: Construction Materials, Industrial Components, Transportation Products, Specialty Products, and General Industry. The Construction Materials segment manufactures rubber and thermoplastic roofing systems, rigid foam insulation panels for roofing applications, vapor and air barriers, HVAC duct sealants and hardware; and block molded expanded polystyrene products used primarily as insulation. The Industrial Components segment is comprised of the tire and wheel business and the power transmission belt business. The segment manufactures and sells non-automotive rubber tires, stamped and roll-formed steel wheels, and industrial belts and related components. The Transportation Products segment offers specialty trailers, including open-deck and multi-unit trailers, over-the-road hauling and general freight trailers, and dump trailer lines, such as steel bottom and side-dumps, end-dumps, and live-bottoms, as well as aluminum end dump and pneumatic bulk tank trailers. The Specialty Products segment provides heavy-duty friction blocks, brake shoes, and disc linings, braking systems and specialty friction products, as well as brake actuation systems for on-highway Class 6, 7 and 8 trucks. The General Industry segment includes the company's foodservice business, the high-performance wire and cable business, and the refrigerated truck body business.

#### **16.1.4.6. Cummins**

- (375) Cummins manufactures and services diesel and natural gas engines, electric power generation systems, and engine-related components, including filtration, and exhaust after-treatment, fuel systems, controls and air handling systems. The company operates through four segments: Engine, Power Generation, Components, and Distribution. The Engine segment manufactures and markets a range of diesel and natural gas-powered engines for the heavy- and medium-duty truck, bus, recreational vehicle (RV), light-duty automotive, agricultural, construction, mining, marine, oil and gas, rail, and governmental equipment markets. It also provides a range of new parts and service, as well as remanufactured parts and engines. The Power Generation segment provides power generation systems, components, and services, including diesel and alternative-fuel electrical generator sets for commercial, institutional, and consumer applications, such as office buildings, hospitals, factories, municipalities, utilities, universities, RVs, boats, and homes. It also offers components that make up power generation systems, including engines, controls, alternators, transfer switches, and switchgear. The Components segment manufactures filtration and

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exhaust systems, as well as fuel systems for on-and off-highway heavy-duty equipment, and supplies filtration products for industrial and passenger car applications. This segment also develops after-treatment and exhaust systems to help customers meet stringent emissions standards. The Distribution segment provides parts and service, including maintenance contracts, engineering services, and integrated products.

#### **16.1.4.7. Eaton**

- (376) Eaton is a diversified industrial manufacturing company that operates in four segments: Electrical, Fluid Power, Truck and Automotive. The company's Electrical segment manufactures various electrical products for power quality, distribution and control, including low and medium voltage power distribution and control products, circuit breakers, and assemblies and components used in managing distribution of electricity, drives, contactors, starters, power factor, and harmonic correction products, and sensors used for position sensing. The Fluid Power segment manufactures various fluid power systems, including pumps, motors, hydraulic power units, hose and fittings, transaxles, transmissions, electro-hydraulic pumps, power and load management systems, and other hydraulic power generation systems, valves, cylinders, electronic controls, cockpit controls, electromechanical actuators, sensors, illuminated, and integrated displays and panels, and other controls and sensing products, and heavy-duty drum and disc brakes, clutches, and controllers for offshore oil and gas exploration, mining, and metal forming markets. The company's Truck segment manufactures truck drivetrain systems, including heavy duty automated transmissions, clutches, transfer boxes, gearshift mechanisms, and rotors, and diesel-electric hybrid power systems for commercial vehicles and buses. The company's Automotive segment manufactures air management systems, powertrain systems, and controls, including engine valves, cylinder heads, air and hydrogen management devices for fuel cells, electronically controlled traction modification devices, compressor control clutches for mobile refrigeration, on-board vapor recovery systems, fuel level senders, and turbocharger waste gate controls.

#### **16.1.4.8. Navistar**

- (377) Navistar International manufactures commercial trucks, buses, diesel engines, military vehicles, and chassis for RV vehicles, and markets related parts and services. The company operates in four segments: Truck, Engine, Parts, and Financial Services. The Truck segment manufactures a broad line of Class 4 - 8 trucks and buses in the common carrier, private carrier, government/service, leasing, construction, energy/petroleum, military vehicles, and student and commercial transportation markets under the International, Navistar Defense, LLC, and IC brands. This segment also produces chassis for RV vehicles under the WCC brand. Additionally, it designs, produces, and markets a brand of light commercial vehicles

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for the truck market in India under the Mahindra brand. The Engine segment designs and manufactures diesel engines for medium trucks, military vehicles, buses, and heavy truck models, as well as for sale to various OEMs. The segment also sells engines for industrial and agricultural applications. The Parts segment provides customers with various products related to the company's brands, as well as offers other standard truck, trailer, and engine service parts. The Financial services segment provides retail, wholesale, and lease finance for products sold by the truck segment and its dealers, and other manufacturers. The segment also finances the company's wholesale accounts and selected retail accounts receivable.

#### **16.1.4.9. Paccar**

- (378) PACCAR engages in design, manufacture of light, medium, and heavy duty trucks, and related aftermarket distribution of various parts and services. The company operates in two principal segments – Trucks and Financial Services. The Trucks segment manufactures heavy duty diesel trucks that are marketed under Kenworth, Peterbilt, and DAF nameplates. The company's trucks are used for over the road and off highway hauling of wide variety of freight, including durable and non-durable goods. The segment markets its trucks and related parts through a network of independent dealers. The company's Financial Services segment offers finance and leasing services to its customers and dealers.

#### **16.1.4.10. WABCO Holdings**

- (379) WABCO is a leading provider of electric and electromechanical products for the world's leading commercial truck, trailer, bus and passenger car manufacturers. The company engages in the development, manufacture, and sale of braking, stability, suspension, and transmission control systems primarily for commercial vehicles. It principally produces pneumatic anti-lock braking systems, electronic braking systems, automated manual transmission systems, and air disk brakes. The company also offers an array of conventional mechanical products, such as actuators, air compressors, and air control valves. In addition, WABCO supplies electronic suspension controls and vacuum pumps to the car and sport utility vehicle markets. Moreover, it sells replacement parts, diagnostic tools, training, and other services to commercial vehicle aftermarket distributors, repair shops, and fleet operators. The company's principal customers include truck and bus original equipment manufacturers. Its customers also include commercial vehicle aftermarket distributor network that provides replacement parts to commercial vehicle operators; trailer manufacturers; and car and SUV manufacturers. WABCO Holdings operates independently of Trane Inc as of July 31, 2007.

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#### **16.1.4.11. Williams Controls**

- (380) Williams Controls manufacture and distribute electronic throttle and pneumatic control systems for heavy trucks, transit busses and off-road equipment. The company's electronic throttle controls are used in various types of vehicles to send a signal proportional to throttle position to adjust the speed of electronically controlled engines. The company's pneumatic control systems are used for vehicle control system applications. The company sells its products directly to the heavy truck, transit bus, and off-road equipment customers, as well as through a network of independent dealers.

### **16.2. Selection of market-based pricing multiples**

- (381) In selecting market-based pricing multiples, I use multiples based on the company's enterprise value to trailing twelve-month ("TTM") EBITDA and EBIT. Trailing twelve-month multiples are calculated by dividing the company's enterprise value on a given date by a measure of its financial performance (in this case, EBITDA and EBIT) over the preceding twelve-month period. In my analysis, I focused on calculating the above discussed ratios for each comparable public company's fiscal year over the 2005–2007 period.

#### **16.2.1. Operating metrics**

- (382) In choosing between operating performance measures, I focus on EBITDA and EBIT, as these measures provide a cross-section of determinants from the income statement, covering both top-line performance (i.e., sales revenue) as well as the efficiency with which a company is operating (by capturing manufacturing and operating costs in EBIT and operating cash flows in EBITDA). EBITDA is defined as earnings before interest, depreciation and amortization (and other non-operating expenses). EBIT is defined as earnings before interest (and other non-operating expenses). Table 18 provides an example of how the various operating income measures are calculated for a sample comparable public company.

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**Table 18: Example EBIT and EBITDA calculation detail for a sample comparable public company**

	Line item	Sample comparable public company
A	Revenue	\$100
B	Cost of Good Sold (ex. Depreciation & Amortization)	\$50
<b>C = A – B</b>	<b>Gross profit</b>	<b>\$50</b>
D	SG&A (ex. Depreciation & Amortization)	\$20
<b>E = C – D</b>	<b>EBITDA</b>	<b>\$30</b>
F	Less: Depreciation and Amortization	\$10
<b>G = E – F</b>	<b>EBIT</b>	<b>\$20</b>

**16.2.2. Enterprise Value**

- (383) Enterprise value (“EV”), also known as the market value of invested capital, is equal to the sum of the market value of equity, total debt and preferred equity, reduced by the amount of cash and cash equivalents.

$$\begin{aligned}
 \text{EV} = & \text{Market value of equity} \\
 & + \text{Total debt} \\
 & + \text{Preferred equity} \\
 & - \text{Cash \& cash equivalents}
 \end{aligned}$$

- (384) Enterprise value is capital structure-neutral and therefore, especially useful for comparing companies with different capital structures.
- (385) An example of EV calculation for a sample comparable public company is shown in Table 19 below.

**Table 19: Example EV calculation for a sample comparable public company**

	Line item	NWPX
A	Closing stock market price	\$12
B	Common shares outstanding	\$15
<b>C = A x B</b>	<b>Market value of equity</b>	<b>\$180</b>
D	Total Debt	\$70
E	Preferred stock	\$0
F	Less: Cash & cash equivalents	\$10
<b>H = C + D + E – F</b>	<b>Enterprise Value</b>	<b>\$240</b>



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### 16.3. Calculation of market-based pricing multiples

- (386) The details of my calculations of market multiples based on EBITDA and EBIT of the selected comparable public companies are presented in this section.

#### 16.3.1. The ArvinMeritor-Eaton sample

- (387) The following tables provide detailed information on calculating the ArvinMeritor-Eaton sample of EV/EBITDA and EV/EBIT ratios. Specifically, I calculate annual EV/EBITDA and EV/EBIT multiples for each company for the 2005–2007 period. I then compute the average EV/EBITDA and EV/EBIT multiples for each company based on the company's annual multiples for the 2005–2007 period. Finally, I derive the sample average EV/EBITDA and EV/EBIT multiple based on the average company multiples for the 2005–2007 period.

**Table 20: EV/EBITDA ratio for the ArvinMeritor-Eaton sample**

EV/EBITDA for 2005–07	2005	2006	2007	Average 2005–07
ArvinMeritor	5.87	4.53	8.53	6.31
Eaton	8.24	8.60	10.28	9.04
<b>Average</b>				<b>7.68</b>

**Table 21: EV/EBIT ratio for the ArvinMeritor-Eaton sample**

EV/EBIT for 2005–07	2005	2006	2007	Average 2005–07
ArvinMeritor	9.74	7.49	18.77	12.00
Eaton	11.42	12.15	14.38	12.65
<b>Average</b>				<b>12.32</b>

#### 16.3.2. The analyst sample

- (388) The following tables provide detailed information regarding the calculation of the analyst comparables sample EV/EBITDA and EV/EBIT ratios. Specifically, I calculate annual EV/EBITDA and EV/EBIT multiples for each company for the 2005–2007 period. I then compute the average EV/EBITDA and EV/EBIT multiples for each company based on the company's annual multiples over the 2005–2007 period. Finally, I calculate the median multiple based on the average company multiples for the 2005–2007 period.

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**Table 22: EV/EBITDA ratio for the analyst comparables sample**

EV/EBITDA for 2005–07	2005	2006	2007	Average 2005–07
ArvinMeritor	5.87	4.53	8.53	6.31
Cummins	4.42	4.62	10.19	6.41
WABCO Holdings			9.31	9.31
Paccar	6.39	6.87	8.84	7.37
Navistar	10.34	7.72	15.22	11.09
<b>Median</b>				<b>7.37</b>

**Table 23: EV/EBIT ratio for the analyst comparables sample**

EV/EBIT for 2005–07	2005	2006	2007	Average 2005–07
ArvinMeritor	9.74	7.49	18.77	12.00
Cummins	5.92	5.86	13.36	8.38
WABCO Holdings			11.36	11.36
Paccar	7.48	7.99	10.78	8.75
Navistar	18.79	11.66	32.81	21.09
<b>Median</b>				<b>11.36</b>

**16.3.3. The GICS-based sample**

- (389) The following tables provide detailed information regarding the calculation of the GICS-based sample EV/EBITDA and EV/EBIT ratios. Specifically, I calculate annual EV/EBITDA and EV/EBIT multiples for each company for the 2005–2007 period. I then compute the average EV/EBITDA and EV/EBIT multiples for each company based on the company's annual multiples over the 2005–2007 period. Finally, I calculate the median multiple based on the average company multiples for the 2005–2007 period.

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**Table 24: EV/EBITDA ratio for the analyst comparables sample**

EV/EBITDA for 2005–07	2005	2006	2007	Average 2005–07
ArvinMeritor	5.87	4.53	8.53	6.31
Accuride	5.57	3.94	6.87	5.46
Borg Warner	7.27	6.67	8.97	7.64
CLARCOR	10.88	10.84	11.28	11.00
Carlisle	9.24	8.43	7.30	8.32
Cummins	4.42	4.62	10.19	6.41
Eaton	8.24	8.60	10.28	9.04
Navistar	10.34	7.72	15.22	11.09
Paccar	6.39	6.87	8.84	7.37
WABCO Holdings			9.31	9.31
Williams Controls	4.96	5.98	9.34	6.76
<b>Median</b>				<b>7.64</b>

**Table 25: EV/EBIT ratio for the analyst comparables sample**

EV/EBITDA for 2005–07	2005	2006	2007	Average 2005–07
ArvinMeritor	9.74	7.49	18.77	12.00
Accuride	7.27	5.52	15.52	9.44
Borg Warner	10.88	11.21	14.02	12.03
CLARCOR	12.81	12.79	13.31	12.97
Carlisle	11.54	10.20	8.90	10.21
Cummins	5.92	5.86	13.36	8.38
Eaton	11.42	12.15	14.38	12.65
Navistar	18.79	11.66	32.81	21.09
Paccar	7.48	7.99	10.78	8.75
WABCO Holdings			11.36	11.36
Williams Controls	5.30	6.48	10.67	7.48
<b>Median</b>				<b>11.36</b>